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ABSTRACT

The theme of this conference was "Libraries and the Communication Process" and topics of the conference papers ranged from the technology of communication to the importance of linguistics and the human factors involved in the communication process. Papers and communications presented at the conference and included here are: (1) "Communicating with the New Electronic Libraries" (C. T. Meadow); (2) "Technical Means for Human Communication" (P.-G. Fontolliet); (3) "Communication and a National Information Policy" (P. Havard-Williams); (4) "Information Services--An Overlooked Component in the Third World Decision Making Process--Experiences from UNESCO Missions" (B. V. Tell); (5) "Communication with the Third World Countries" (J. S. Musisi); (6) "Libraries and Information in Developing Countries" (P. Havard-Williams); (7) "IFLA's Role in Aiding International Communication Between Libraries" (Else Granheim); (8) "Systems versus Users: An Analysis of the Art and/or Science of Search Negotiations" (Kathleen T. Bivins); (9) "The Third Wave of Library and Information Work" (Betty K. Oldroyd); (10) "Poster Sessions as a New Viewpoint of Scientific Communication--General Problems and Library Aspects" (D. Schmidmaier); (11) "Some Problems and Proposals for Communication in Mechanical Engineering" (V. Jarc); (12) "Communicating Scientific Information Through a University Library Network" (D. Shaw); (13) "User Studies in Connection with the Development of a Decentralized Library Network" (Nancy Fjallbrant and O. Friberg); (14) "The Technological University Library's Communication with Its Public" (A. C. Bubb); (15) "Libraries and the Communication of Information: The Jamaican Situation" (Yvonne T. Lawrence); (16) "Public Relations of Scientific Libraries in the Federal Republic of Germany" (Y. A. Haase); (17) "Further to My Egg: The Story of an Australian Library Campaign" (A. Mortimer); (18) "Technical Cooperation Between Libraries and the Advanced Subscription Agents" (A. de Kemp); (19) "Dilemmas of Document Communication" (A. Andersen); (20) "A Computational Linguistics Approach to Conceptual Information Processing" (Inger Bierschenk); and (21) "Communication Skills: The Role of the Library School" (B. Meakin). A summary paper, abstracts of each of the papers, a conference program, and an author index are included. (THC)

Proceedings of the Ninth Meeting of IATUL Lausanne, Switzerland April 12 - 16, 1981

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Libraries and the communication process

edited by Nancy Fjällbrant

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IATUL

Proceedings of the Ninth Meeting of IATUL Lausanne, Switzerland April 12-16, 1981

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edited by Nancy Fjällbrant

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FOREWORD

On methods of communication .....

"It is a very inconvenient habit of kittens (Alice had once made the remark) that, whatever you say to them, they always purr. "If they would only purr for 'yes', and mew for 'no' or any rule of that sort," she had said, "so that one could keep up a conversation! But how can you talk with a person if they always say the same thing?"

Lewis Carroll (1832-1898)
Through the Looking Glass

Information handling in the 'eighties is in an era of rapid change. Over the last five years there has been a dramatic price performance improvement in the processing and storage power of computers, due to Large Scale Integration (LSI) of computer circuits, and new developments in storage technology such as the video or optical disc. The potential on-line storage for any single computer system is very large. At the same time developments in telecommunications such as packet-switching and satellite transmission provide an ever growing choice of information systems that can be accessed by potential users. This ninth IATUL Conference with the theme "Libraries and the communication process" includes papers ranging from the technology of communication, to the importance of linguistics and the human factors involved in the process of communication. Communication between libraries throughout the world formed the basis of a large part of the conference: with papers on IFLA's role in creating a framework to facilitate sharing resources, the development of national and international information policies, and communication with, and within, third world countries. It is hoped that this collection of papers will stimulate librarians in their work as communicators.

Nancy Fjällbrant

9th IATUL CONFERENCE

12th - 16th April 1981, Lausanne, Switzerland

LIBRARIES AND THE COMMUNICATION PROCESS

Participants

Jesse Andriese,
Elsevier Science Publ. Amsterdam, The Netherlands

Axel Andersen,
Lecturer,
Royal School of Librarianship, Copenhagen, Denmark

Anne Bein
Springer-Verlag KG, Berlin, West Germany

Kathleen T. Bivins,
Professor,
Guest Research Fellow,
University of Linköping, Linköping, Sweden

Charles Bubb,
Librarian,
University of Salford, Salford, U.K.

Nancy Fjällbrant,
Deputy Librarian,
Chalmers University of Technology, Gothenburg, Sweden

Pierre-G. Fontolliet,
Professor,
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Else Granheim,
President of IFLA,
Statens Bibliotektilsyn, Oslo, Norway

Peter Grothe,
Springer-Verlag KG, Berlin, West Germany

Yorck Haase,
Library Director,
Hessische Landes- und Hochschulbibliothek, Darmstadt, West Germany

Gustaf A. Hamel,
Library Director,
The Library, Technological University Twente, Enschede, The Netherlands

Peter Havard-Williams,
Professor,
Head of Department of Library and Information Studies, Loughborough University,
Loughborough, U.K.

Ahmed Helmi Helal,
Library Director,
Essen University Library, Essen, West Germany

Michael W. Hill,
Director,
Science Reference Library, British Library, London, U.K.

Pierre Immer
Administrative Manager
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Valentin Jarc,
Central Technical Library, University of Ljubljana, Ljubljana, Yugoslavia

Dieter Johannes,
Library Director,
The Library, University of Kaiserslautern, Kaiserslautern, West Germany

Arnoud de Kemp,
Swets & Zeitlinger, Lisse, The Netherlands

Yvonne T. Lawrence,
Librarian,
Supreme Court Library, Kingston, Jamaica

Franz G. Maier
Director
Bibliothèque Nationale, Bern, Switzerland

Charles T. Meadow,
Professor,
School of Library and Information Science, Drexel University, Philadelphia, USA

Arthur Mortimer,
Liaison Librarian,
David Murray Library, South Australian Institute of Technology, Adelaide, South Australia

Jafred S. Musisi,
Library Director,
Kenya Science Teachers College, Nairobi, Kenya

Johannes J. Nouwen,
Swets & Zeitlinger, Lisse, The Netherlands

Betty K. Oldroyd
Head of Library and Information Services
European Space Research and Technology Centre of the European Space Agency, Noordwijk, The Netherlands

Harriet Rinne,
Head of cataloguing and acquisitions,
Royal Institute of Technology Library, Stockholm, Sweden

Nurit Roitberg,
Elyachar Library, Technion-Israel Institute of Technology, Haifa, Israel

Dieter Schmidmaier,
Library Director,
Bibliothek "Georgius-Agricola", Freiberg, East Germany

Dennis Shaw,
Keeper of Scientific Books,
Radcliffe Science Library, Oxford, U.K.

Mara Slajpah,
Professor,
Library Director,
Central Technical Library, University of Ljubljana, Yugoslavia

Jean-Pierre Sydler,
Library Director,
Eidgenössische Technische Hochschule Bibliothek, Zürich, Switzerland

Thomas J. Tanzer,
Library Director,
Bibliothèque de l'Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

John S. Teague,
Librarian,
The City University, Library, London, U.K.

Björn Tell,
Library Director,
University Library, Lund, Sweden

Knut R. Thalberg,
Library Director,
Norwegian Institute of Technology, The Library, University of Trondheim,
Trondheim, Norway

Liliane Vezier,
Library Director,
Bibliothèque de l'Université de Technologie de Compiègne, Compiegne Cedex,
France

Valentin Wehefritz,
Library Director,
University Library of Dortmund, Dortmund, West Germany

Sven Westberg,
Library Director,
Chalmers University of Technology, Gothenburg, Sweden

Charles Wood,
Librarian,
Andersonian Library, University of Strathclyde, Glasgow, U.K.

Jan Zandvliet,
Library Director,
Delft University of Technology, Delft, The Netherlands

József Zsidai,
Library Director,
Central Library of the Technical University for Heavy Industry, Miskolc, Hungary

INTRODUCTION TO THE IATUL CONFERENCE THEME

J.P. Sydler
President of IATUL
Library Director, Eidgenössische Technisch Hochschule Bibliothek, Zürich, Switzerland

As a general theme for our conference, the committee has chosen "The process and the problems of communication."

Communication is a very complex process. According to one American encyclopedia, it is the interchange of thoughts and ideas and the means used for such interchange, and in an English encyclopedia, the "exchange of meanings between individuals through a common system of symbols". According to I.A. Richards, communication takes place when one mind so acts upon its environment that another mind is influenced, and in that other mind an experience occurs which is like the experience in the first mind, and is caused in part by that experience. For me, the most important point of these definitions is the fact that, after communication has taken place, transmitter and receiver have a common knowledge about something.

The simplest case of communication is the direct contact between two persons. Even in this case, however, there are many problems. Language is a first barrier, as you notice now. Both interlocutors must also have a minimum of compatible knowledge; they have to be more or less on the same wavelength. And even then, you cannot be sure that communication takes place. We shall not study these problems here; it is a matter of semantics, psychology, education, which is going from the personal contact to mass communication.

For a very long time this direct contact has played the main role in the development of science. The relation master - disciples was almost the only way of conveying knowledge, and it is still very important. Consider, e.g. lectures, conferences, meetings, symposia. Nevertheless, the moment comes when a person looking for information has no more time either for oral communication or for correspondence with his colleagues. This was the reason for the creation of the first scientific journal 316 years ago. After Gutenberg, after the birth of reviews and documents, a new era of communication began. Knowledge was no longer only in the brain of the scientists, there was a collective memory, accessible to everybody, independent of space and time. And this common memory grew in an unexpected way.

I like one description of this growth. Every year at least one million articles are published in the field chemistry. If a reader spends one hour a day reading two articles, it amounts to 500 articles a year, and it would take him two thousand years to go through an annual production in chemistry only.

Therefore you have to make a selection among the documents, but how should it be done? You can consult a bibliography and look for information according to the different key words and the classification elements. Since no bibliography is complete, you eliminate documents almost by chance. Then, when you try to find the documents, there is another loss. Nowadays, better bibliographies are available as well as data banks or data bases, which are quicker and more complete. But the choice is still more or less random. The situation is perhaps even worse than before. If you are expecting ten documents from a bibliographic search, and you receive a hundred items at your terminal, you are generally convinced that you now have all the information. However, the hundred and first document is perhaps the one you need. The situation may be paradoxical. In the past, because of a lack of information, many experiments were made which had already been done elsewhere. Today, many experiments are made because of too much information. It is sometimes impossible to find the right tree in a big forest.

Communication obeys perhaps some general laws. I could imagine that it follows the path of least resistance. One idea is easily transmitted, another doesn't go through. There must also be a convenient moment when an idea is ripe for communication. At that time, a completely new discipline may grow rapidly, for example, topology. Communication is established with a great number of people. At the same time, another discovery has no chance of being communicated and growing, and it remains unused in the general memory. It will perhaps be discovered later by a historian of science, and if communicable, can become a new idea.

But for us librarians, the existence of documents has had another important consequence. It is possible to create collections everywhere on special domains, technical libraries for example. Communication has taken on a new aspect. The author may be at one place in time and space and the user elsewhere. There must be a contact between them in order for communication to take place. The library is a link in the process but it is not necessary that it has in memory the knowledge either of the author or of the user. Nevertheless, the library cannot be only a means of transmission. It must know something about the author. This knowledge may be reduced to an abstract or a few descriptors. A specialist as a librarian is the dream of each library, but is seldom possible. On the other hand, the library also has to establish the contact with the user. This is generally done by means of a catalogue, but there too, a specialized librarian could be useful, sometimes even a psychologist, aiming to find out the real needs of the users. This contact is indispensable when the technical libraries have access to the modern information on-line systems.

But a customer service has its limits. A library cannot read and understand the documents for the user. A new profession should be developed which would analyse and repack the relevant documents, but this should happen subjectively as a function of the personal aims of the user.

The main function of a library was a quicker access to the required documents. It was no longer necessary to contact the United States for each American report; you found it in the neighbourhood. It was the dream of each professor to have in his room all the literature he needed, the dream of each country to have at least one copy of each published book. This dream can perhaps still be a reality in the USA or in Russia. The number of documents and their price let it be a dream everywhere. So we have to find another solution. One could think, for example, having one library in Europe where all African literature could be found. As the number of complete specialized libraries decreases, the access way increases.

If the distances become longer, you must accelerate the transmission. Modern techniques have already found a solution for the transmission of information. Telecommunications and computers make it possible within a few minutes to be in contact with the biggest databases everywhere in the world. But, unfortunately, this has a deplorable consequence for the technical libraries. They are still unable to send the documents everwhere in a few minutes. Even if they make photocopies or microcopies, they have to send the documents by post, and even air-mail is slower than the radio. Facsimile and television systems are still too slow and too expensive for the libraries, and compared with the successful information industries, the libraries give the impression of retrograding.

Nevertheless, the technical libraries have to study the technical problems in order to improve their efficiency. Computers, telecommunications, information networks have already found their way into the libraries. There will probably be many more new possiblilites in the near future. It could be a great progress, but I see a danger in it. We must agree that communication between libraries is not easy. The international interlibrary search service is functioning, but what else? We spoke about collaboration during our last conferences, but I am still missing significant results. If communication between persons is difficult, communication between computers is sometimes impossible. Software systems are welcome when they are portable and allow an immediate embedding; but they are often not adopted if they are only compatible. However, American experience shows that we are facing a huge development, where we shall need a good communication among us. We will speak about these technical problems at our next conference, when we'll have more experience in Europe, especially with Euronet.

For this conference, we have enough matters to discuss, and we had to make a choice among the numerous problems.

We have to communicate in our own library with our own staff, and this is not the easiest problem. We have to communicate with our customers, and this is probably one of our main tasks. We shall study this problem on Thursday. We have to communicate with the editors and the booksellers, but we also have to communicate with the general public. The image of libraries is still disappointing. For the man in the street, it is mainly an unnecessary old-fashioned expensive institution with a staff of second category, but it is slowly improving. Scientists and engineers have discovered the importance of literature. I recently saw a book on "Communication: the essence of science" (by Garvey). It is a study of the communication structure of science from the birth of a new idea in the mind of a searcher to its integration in the common knowledge of all scientists. Those scientists have to adapt their behaviour, but in this new system, the librarians have to play an important role; they must change their methods and conceptions and become experts of transmission; they have to be a link of communication in a changing world.

In this framework, the problem becomes a sociological one, and thus even a political one. We have to improve the communication libraries — politicians. Already Unesco and OECD speak about information, documentation and libraries. The technical information has been important in the dialogue between the East and West and is even more important in the dialogue between the North and South. We shall discuss communication with the third world on Tuesday. For our everyday work, it is necessary to communicate also with the politicians of our own country, of our town.

Our problem is that communication and libraries are also (perhaps even mainly) an economic problem. In a difficult financial situation, the first reaction of the authorities will be to cut back library funds, instead of increasing them in order to improve research and competitive power. We know it, and we shall try to communicate it to the decision makers.

Semantics, technology, sociology, economics ... It is impossible to study all the facets of the communication process. We have tried to choose a few important points and our speakers will teach us a lot. But it is not enough to listen this week, we shall think about it again and again when we are back in our library.

ADDRESS OF WELCOME

Franz G. Maier

Director, Bibliothèque Nationale, Bern, Switzerland

Abstract

A survey of the library scene in SWITZERLAND, was presented in which the historical and political conditions that govern this aspect of the Swiss life were stressed. The federalistic constitutional structure, which reflects the diversity of the country, gives the cantons and the local communities responsibility for the libraries. Consequently, there are only three libraries under the central government: the two libraries of the Swiss Federal Institutes of Technology in LAUSANNE and in ZURICH, and the Swiss National Library. The latter, however, has no problems of leadership or direction since its only purpose is to collect all the Helvetica produced throughout the world. The autonomy that the 6,000 Swiss libraries enjoy renders a national library policy well nigh impossible. The reason for this state of affairs is the lack of a national coordinating body; in addition, there is a lack of funds and finally there is no legal basis on which the federal government could be effectively involved in library matters. Working parties of experts have been working for years to find a practical compromise to reconcile the interests of libraries with a national information and library policy. Apart from this, it is a well-known fact that SWITZERLAND is a direct democracy. This has direct repercussions on the library scene since the people participate directly even in specialised questions and are currently demanding a very restrictive personnel policy for the federal administration. For 6 years now, the number of federal civil servants has not changed; lack of personnel is actually the most acute problem in most Swiss libraries. Another factor is that industry and its sizeable libraries actually carry out many of the tasks in the field of information which government agencies deal with in other countries. The industrial libraries are thoroughly integrated into the Swiss library scene and participate actively in inter-library lending. The activities of the specialised Swiss libraries in the fields of applied science and technology can, thanks to the two libraries of the Swiss Federal Institutes of Technology and the substantial industrial libraries, be considered as satisfactory. The fact that SWITZERLAND has not, for more than 100 years, been involved in any war and has not had any internal strife results in a rather conservative attitude of the population and many of its librarians. The Swiss are very attached to old and proved principles; they are wary of experimenting with the new and the uncertain.

This may be the reason why the convictions of the people concerning libraries are not as developed as in countries that have not known such peaceful development. Contact with foreign colleagues is particularly beneficial for the Swiss. The Swiss are rightly recognised as having a highly developed book and reading culture. SWITZERLAND is in the forefront of the literature producing countries of the world, its graphic industry enjoys a high reputation and according to recent polls, the Swiss read more than their immediate neighbours. The efforts to improve scientific librarianship in the country, together with the efforts to merge very diversified work, must, in a direct democracy, undoubtedly be linked to a good public library system, with a literature supply sufficient for the whole population. It is only personal experience that can convince the citizens of the value of information and of libraries, and only when convinced will they provide the material sacrifices needed for a good scientific information and library network for the country.

BEGRÜSSUNGSREDE

F.G. Maier

Direktor, Schweizerische Landesbibliothek, Bern, Schweiz

Ich begrüsse Sie herzlich im Namen von Herrn Bundesrat Dr. Hans Hürlimann, der sich verhindert sieht, der Eröffnung des IATUL-Kongresses persönlich beizuwohnen. Er ist sich der Bedeutung Ihrer Arbeit im Dienste der technischen Informationsbeschaffung wohl bewusst und wünscht Ihren Verhandlungen einen erfolgreichen Verlauf.

Als Direktor der Schweizerischen Landesbibliothek erlaube ich mir, Ihnen einen kurzen Ueberblick über das Bibliothekswesen unseres Landes zu geben. Im besonderen möchte ich versuchen, Ihnen die historischen, rechtlichen und kulturellen Gegebenheiten und Bedingungen nahezubringen, unter welchen sich die Entwicklung des schweizerischen Bibliothekswesen vollzogen hat.

Das Bibliothekswesen jedes Staates wird von der Landesgeschichte wesentlich mitbestimmt. Die Schweiz hat sich vor 133 Jahren aus vielen praktisch selbständigen Gemeinschaften zu einem Staatsverband zusammengefunden. Darin leben Menschen, welche vier Sprachen sprechen: Drei Viertel der Schweizer sprechen Deutsch, ein Fünftel Französich, 4% Italienisch und 1% Rätoromanisch. Bezieht man sich auf die gesamte Wohnbevölkerung von heute, schliesst man also die zahlreichen Gastarbeiter mit ein, dann erhöht sich der Anteil der italienischsprechenden Einwohner auf 12%, vor allem auf Kosten des deutschsprechenden Bevölkerungsteils. Die Einwohner unseres Landes gehören zu fast gleich grossen Teilen zwei Konfessionen an, dem reformierten und dem römisch-katholischen Glauben. Einer solchen sprachlichen, konfessionellen und auch kulturellen Vielfalt kann nur eine föderalistische Staatsstruktur angemessen sein. In unserer Bundesverfassung werden die 26 Kantone, die "Staaten" der alten Eidgenossenschaft, als "souverän" bezeichnet. Sie haben im Laufe von 100 Jahren zwar an Selbständigkeit verloren, indem sie nach den Erfordernissen des modernen, mehr und mehr technisierten Lebens und nach den Gepflogenheiten der internationalen Politik zahlreiche Rechte und Aufgaben an die zentrale staatliche Macht, an den "Bund" -- wie wir zu sagen pflegen -- abtreten mussten.

Die Kantone haben indessen ihre tragende Rolle in unserem Bundesstaat noch lange nicht ausgespielt. Ganz im Gegenteil: Einige Volksabstimmungen der letzten Jahre weisen

deutlich daraufhin, dass es der Wille des Volkes ist, am Foederalismus festzuhalten, ja die dezentrale Machtausübung eher noch zu verstärken. Es wird in naher Zukunft sehr wahrscheinlich zu einer Ueberprüfung der Kompetenzbereiche von "Bund" und Kantonen kommen. Was die revidierte Kompetenzausscheidung bringen wird, ist einigermassen klar, soweit sie die Bibliotheken betrifft: Bildung, Schulwesen, Kultur und zu einem guten Teil auch die Wissenschaft, insofern sie als Lehre und Forschung an den Hochschulen betrieben wird, sind und bleiben im Kompetenzbereich der Kantone. Was heisst das konkret für das schweizerische Bibliothekswesen? Es wird zum ersten bei den drei bundesstaatlichen Bibliotheken bleiben -- von den verwaltungsinternen Bundesbibliotheken sehen wir hier ab --: die beiden Schulbibliotheken der ETH, die grössere in Zürich, die als Bundesbibliothek jüngere und kleinere in Lausanne, und die Schweizerische Landesbibliothek in Bern, als Nationalbibliothek mit bewusst beschränktem Aufgabenkreis. Sie sammelt nur das schweizerische Schrifttum. Was an dieser Kompetenzverteilung wohl noch bedeutsamer ist: Die verfassungsrechtliche Eigenständigkeit der übrigen ca. 6.000 Bibliotheken in unserem Lande muss zwangsläufig eine nationale Bibliothekspolitik in starkem Masse erschweren, d.h. eine Zusammenarbeit, die von nationalen Interessen bestimmt und auf nationale Bedürfnisse ausgerichtet ist. Eine nationale Bibliothekspolitik ist aber zwingend in einer Zeit, in welcher sich so viel so rasch verändert, welche nach Rationalisierung, Technisierung, Mechanisierung, Automatisierung, nach Normen, Richtlinien, verpflichtenden Abmachungen ruft, in welcher Zusammenarbeit ja meist auch Arbeitsteilung bedeutet und damit Verzicht auf einen Teil der Selbständigkeit der einzelnen Bibliotheken. Es fehlt ein nationales zentrales Leitungsorgan. In vielen Staaten, auch in foederalistischen, spielt meist die Nationalbibliothek diese Rolle einer koordinierenden, leitenden Zentralstelle. Es fehlen weiterhin die finanziellen Mittel, um eine Kooperation einzuleiten und sie attraktiv zu gestalten; es fehlt die Macht, sie gegen mancherlei Sonderinteressen und insbesondere gegen das Traditionsbewusstsein der angesprochenen Partner durchzusetzen, und es fehlen endlich die gesetzlichen Grundlagen, die ein wirksameres Eingreifen des Bundes überhaupt erlauben würden. Was bleiben wird, sind die von der Regierung eingesetzten Expertenkommissionen. Sie lösen einander in den letzten Jahren ab mit stets dem gleichen Auftrag, nämlich Richtlinien, Thesen, praktische Vorschläge auszuarbeiten für eine wirksamere Zusammenfassung der in all unseren Bibliotheken geleisteten Arbeit, für stärkere Zusammenarbeit auf nationale Ziele hin. Da keine Kraft diese Richtlinien durchzusetzen vermag, weil das nötige Geld nicht vorhanden ist, die aufgerufenen Bibliotheken materiell zu motivieren, ihnen die Aufgabe eines Teils ihrer Autonomie zu erleichtern, werden diese Vorschläge meist nur zu einem kleinen Teil verwirklicht und bald durch neue ersetzt.

Es bleibt die Hoffnung, dass die Bibliotheken, zumindest die bedeutendsten unter ihnen, sich einmal selbsttätig, in eigener Verantwortung zu gemeinsamem Werk zusammenfinden. Diese Hoffnung wird sicherlich nicht enttäuscht werden. Es braucht bloss Geduld

dazu. Der Schweizer ist daran gewöhnt von anderen sozialen Bereichen her. Wenn die Lösung von drängenden Fragen unaufschiebbar geworden ist, findet man in langwierigen Verhandlungen Kompromisse, bei denen jeder ungefähr soviel zu profitieren hofft, wie er dafür zu opfern bereit ist. Einer der bedeutendsten und bekanntesten Schweizer, der Theologe Karl Barth, hat diesen Wesenszug schweizerischer Politik folgendermassen glossiert: "Es ist klar, dass auch die wohlmeinendste schweizerische Politik unter diesen Umständen nur eine Politik der Verlegenheit sein, dass die Schweiz eigentlich dauernd nur in Form von halben Lösungen, von vorläufigen Regelungen, von Vermittlungsversuchen, von mehr oder weniger ehrlichen und erfolgreichen Kompromissen (zu deutsch: Kuhhändeln) regiert werden kann". ("Zum 1. August 1941": Erschienen in "Leben und Glauben").
Im Grunde ist wohl jeder meiner schweizerischen Kollegen mit mir einig, dass dieser Foederalismus, seine Gesetze und Gepflogenheiten und Zwangsläufigkeiten, die uns heute im Bibliothekswesen so oft bedrängen, uns manchmal gar lästig fallen, eben doch auch ihre Vorteile besitzen. Sie sind in unserem Fachbereich nicht zu unterschätzen. Der Foederalismus fördert die Initiative einzelner Bibliotheken und Arbeitsgruppen, er sichert ein bedürfnisnahes und damit vielgestaltiges Schaffen, er spornt durch Rivalität zu besonderen Eigenleistungen an. Aber all dies bedeutet nichts im Vergleich zur staatspolitischen Begründung des Foederalismus. Der Schweizer Bibliothekar ist auch Staatsbürger und er weiss, dass unser Staat ohne seine foederalistische Struktur das 19. Jahrhundert der sich bildenden Nationalstaaten, das 20. Jahrhundert der beiden Weltkriege wohl nicht überlebt hätte.

Zum Foederalismus kommt eine zweite politische Gegebenheit hinzu, mit der nicht nur wir Bibliothekare zu rechnen haben. Die Schweiz ist eine direkte (oder doch halbdirekte) Demokratie; dies ist sozusagen die schweizerische Spielart der Demokratie. Das Volk wählt nicht nur seine Vertreter und überlässt ihnen für eine bestimmte Dauer die Gesetzgebung, sondern es besitzt im Initiativrecht und vor allem im Referendumsrecht ein direktes Mitspracherecht in Sachfragen.

Es finden im Jahr Dutzende von Volksabstimmungen über Sachfragen auf der Ebene des Bundes, der Kantone und der Gemeinden statt. Und nicht wenige Vorlagen, die Regierung und Parlament ausgearbeitet haben, scheitern am verbindlichen Entscheid einer Volksabstimmung. Was mir besonders wichtig erscheint: Das Volk übt damit eine ständige und unmittelbare Kontrolle über seine gewählten Vertreter und ihr Handeln aus. Diese Vertreter werden sich hüten, den offenkundigen Willen des Volkes zu missachten. Gewiss ist dieser Volkswille nicht immer "offenkundig", er ist nicht überall leicht erkennbar. In einem Punkt indessen glaubt heute jeder, ihn zu kennen. Eine Mehrheit der Bürger verlangt vom Staat (vom Bund, von seinem Kanton, von seiner Gemeinde) Sparsamkeit über alles: möglichst bescheidenen personellen Aufwand, möglichst kleinen bürokratischen Apparat. Seit sechs Jahren ist allen Bundesämtern vom Parlament ein

absoluter Personalstopp auferlegt. Was dies in Jahren eines gewaltigen Informationszuwachses für die beiden Bibliotheken unserer Eidgenössischen Technischen Hochschule und für die Landesbibliothek bedeutet, werden Sie selbst ermessen können. Drückender Personalmangel ist wohl das Hauptproblem unserer wissenschaftlichen Bibliotheken, nicht nur der Bundesbibliotheken, sondern mit wenigen Ausnahmen auch der Bibliotheken der Kantone und der Gemeinden. Man hat schon lesen können, der Schweizer sei, gemessen am Bruttosozialprodukt pro Kopf der Bewölkerung, einer der reichsten Erdenbürger -- sein Staat dagegen ist, sollte man gleich anfügen, der ärmsten einer. Der Bürger pflegt ihm nur das Allernotwendigste zu geben; er möchte den Wohlstand auf direktem Wege für sich erreichen, nicht über oder gar für den Staat.

Ein drittes Element darf nicht übersehen werden, wenn wir die soziale Umwelt der Schweizer Bibliotheken untersuchen. Die Schweiz besitzt eine Industrie, die bekanntlich vorwiegend auf die Produktion von Qualitätserzeugnissen ausgerichtet ist. Forschung und Informationsbeschaffung sind für sie lebensnotwendig. Drei Viertel der Forschung, die in der Schweiz betrieben wird, geht zu Lasten und auf Kosten der Industrie, eine Tatsache, die Nichtschweizer immer wieder erstaunt.

Die Industrie übernimmt bedeutende Aufgaben, die anderswo dem Staat zufallen -- auch im Bibliothekswesen. Zusammen mit der Hauptbibliothek der ETH in Zürich, der grössten Fachbibliothek der Schweiz und einer der grössten Europas, spielen die Industriebibliotheken eine höchst wichtige Rolle im schweizerischen Bibliothekswesen. Man darf wohl behaupten, dass dank ihren Beständen, ihrer Dokumentationsarbeit und ihrer Liberalität in der Ausleihe der Entwicklungsstand des Fachbibliothekswesens, soweit es die angewandten Wissenschaften und z.T. auch die Naturwissenschaften betrifft, als durchaus befriedigend bezeichnet werden kann. Die internationale Marktwirtschaft erhält die Industrieunternehmen lebendig; auch im Informationsbereich bleiben sie effizient und flexibel und nicht selten sind sie kooperationsbereiter als manche öffentliche Bibliothek. Von ihrer wertvollen Informationsarbeit profitieren dabei alle Schweizer Bibliotheken, auch die öffentlichen Bibliotheken und Dokumentationsstellen, denn die Bibliotheken der Industrie sind in das schweizerische Bibliothekswesen integriert; sie nehmen insbesondere am bibliothekarischen Leihverkehr aktiv und ohne wesentliche Einschränkung teil.

Ich habe einleitend festgestellt, dass die Geschichte das Bibliothekswesen eines Landes mitbestimme und mitforme. Sie prägt natürlich auch die Mentalität der Bevölkerung. Es ist bekannt, dass die Schweiz seit mehr als einem Jahrhundert keinen Krieg und keine inneren Wirren mehr erlebt hat. Wir verdanken dies einem gnädigen Schicksal. Diese Absenz von Krieg und Unruhe führte fast zwangsläufig zu einer konservativen Grundhaltung der Bevölkerung, zu einer Skepsis allem Neuen gegenüber, zu einer Scheu vor Aenderungen. Es ist alles so gut gegangen bis jetzt, warum also das Errungene durch

allzu schnelles und unbedachtes Handeln wieder aufs Spiel setzen, fragt sich die Mehrzahl der Eidgenossen. Wohlstand macht vorsichtig.

Zeigt sich das nicht auch darin, dass sich Bibliotheks- und Informationsbewusstsein der Bevölkerung nicht in gleichem Masse, nicht in gleichem Tempo entwickelt hat wie in Staaten, welche Zeiten des Umbruchs, des brüsken Wandels und des Neubeginns zu ertragen hatten? Sind nicht auch die ungemeine Wertschätzung, welche der Schweizer durch Jahrzehnte der Schule als der Institution des "geführten" Unterrichts entgegenbrachte, das Misstrauen, das er gegen die selbstättige Aus- und Weiterbildung und deren Instrumente hegte, Zeichen dieses Geistes? Heute ist eine solche Geisteshaltung wohl im Wandel begriffen, aber sie hat die Entwicklung der Bibliotheken zweifellos verlangsamt. Auch die Schweizer Bibliothekare sind von dieser nüchternen Vorsicht vieler ihrer Mitbürger nicht frei; viele unter ihnen neigen dazu, wenig zu experimentieren, um nichts zu riskieren. Auch sie ziehen Erprobtes, Bewährtes oft, allzu oft vielleicht, dem ungewissen Neuen vor. An Ihrer Tagung wird diese Haltung weniger zum Ausdruck kommen als an den nationalen Bibliotheksversammlungen. Man hat behauptet, die Liebe zur Tradition und zur kontinuierlichen, nichts überstürzenden Entwicklung sei besonders in unserem Berufe eine durchaus lobenswerte Eigenschaft; sie kann indessen in einer dynamischen Epoche, wie sie die Bibliotheken seit zwanzig Jahren erleben, leicht zu gefährlichem Rückstand führen. Und gerade deshalb tut uns der Kontakt mit ausländischen Kollegen und Freunden so gut.

Wenn ich noch kurz auf die Buchkultur unseres Landes zu sprechen komme, ist dies kaum ein Thema, das Sie während Ihrer Tagung beschäftigen wird. Vorab gilt es festzuhalten, dass der Stand des Bibliothekswesen nur ein Kriterium darstellt, die Buch- und Lesekultur eines Volkes zu messen und zu beurteilen. Unsere allgemeinwissenschaftlichen Bibliotheken und unsere "Public libraries" stehen heute sicher nicht an der Spitze der internationalen Entwicklung. Dagegen rühmt man der Schweiz ein äusserst aktives Verlagswesen nach. Es werden nach der Statistik der Unesco in keinem Staat der Welt -- Island ausgenommen -- soviele Bücher jährlich herausgegeben wie in der Schweiz, bezogen auf deren Einwohnerzahl; es werden nirgendwo mehr Zeitschriften und Zeitungen publiziert als in unserem Lande. Auch unter qualitativem Gesichtspunkt geniesst das Schaffen unserer deutschschweizerischen und französischsprachigen Verlage, wie auch der graphischen Betriebe weltweite Anerkennung. Wie es um den Buchhandel steht, mögen Sie während Ihres Aufenthaltes in Lausanne selbst erkunden. Nach meinen Erfahrungen werden Sie auch hier zu einem positiven Urteil kommen. Wenn wir schliesslich den Ergebnissen der vielen Umfragen Glauben schenken, welche das Leseverhalten eines Volkes untersuchen, dann schneidet auch der Schweizer Leser recht vorteilhaft ab. Er soll mehr Bücher und Zeitungen lesen als seine Grenznachbarn. Ueber den Stand der Buchkultur im allgemeinen dürfen wir Schweizer wohl mit grösserer Berechtigung Stolz empfinden als über die gegenwärtige Lage unseres Bibliothekswesen.

Die Schweizer Bibliothekare wissen wohl, dass es im Bibliotheks- und Informationswesen des Landes noch vieles zu verbessern gibt; in erster Linie muss versucht werden, die vielfältigen Anstrengungen sinnvoll und wirksam zusammenzufassen und stärker auf nationale Ziele auszurichten. Eine wichtige Voraussetzung dazu ist, gleichzeitig ein leistungskräftiges, gut funktionierendes "Public-library-System" als Grundlage für ein wissenschaftliches Bibliothekswesen zu schaffen, also eine befriedigende Literaturversorgung für die gesamte Bevölkerung sicherzustellen. Denn in einer direkten Demokratie kann der Bürger allein durch die persönliche Erfahrung, was eine rasche und problemlose Informationsbeschaffung auch für ihn bedeuten kann, vom Nutzen einer Bibliothek überzeugt werden.

Er wird dann bereit sein, auch für wissenschaftliche Bibliotheken und Informationseinrichtungen materielle Opfer zu bringen, d.h. entsprechende Steuerlast zu tragen. Er sollte erkennen, dass Information und Informationsbeschaffung in naher Zukunft wohl den gleichen Stellenwert erhalten werden wie der Besitz von Energiequellen und die Beschaffung von Energie.

Ich habe einleitend die Ansicht vertreten, dass die historischen und die politischen Gegebenheiten das Bibliothekswesen eines Staates entscheidend mitbestimmen. Seit je war es schwierig, ausländischen Gästen und Freunden die schweizerischen Verhältnisse begreiflich und einigermassen durchschaubar zu machen. Im 17. Jahrhundert schon ging ein lateinischer Spruch unter den Gelehrten um: "Hominum confusione et Dei providentia Helvetia regitur", was zu deutsch heissen will: Die Schweiz wird regiert durch der Menschen Verwirrung (oder vielleicht besser Verlegenheit) und durch die Vorsehung Gottes. Man ist versucht, diesen Spruch auch für das schweizerische Bibliothekswesen als gültig zu erklären. Vielleicht darf man auf das helvetische Bibliothekswesen aber auch übertragen, was Karl Barth von den diese unorganisierte Schweiz umgebenden politischen Organismen gesagt hat: "Wie viele grosse und kleine Staaten und Reiche da draussen, die nicht in unserer Verlegenheit waren, sind in den letzten 650 Jahren gekommen und gegangen, während die Schweiz mit ihrer dauernd verlegenen Regierung immer noch ist". Auch die Schweizer Bibliothekare sind vorderhand noch da mit ihren Problemen und in ihrer Verlegenheit und sie wünschen Ihnen von Herzen schöne Tage in ihrem Lande, an die Sie sich noch lange mit Freude zurückerinnern mögen.

WELCOME ADDRESS

Pierre Immer

Administrative Director, Ecole Polytechnique Fédérale de Lausanne, Switzerland

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M. IMMER traced a brief history of the Institute since its inception in 1853, its development from a private school to a cantonal academy that was incorporated into LAUSANNE University in 1869 to assume the status that it holds today as an independent institute of the Federal Government responsible to its Board of Governors.

He further pointed out that the Institute is an "Ecole Polytechnique" and not an "Université Polytechnique". The essential difference is that the Swiss Federal Institute of Technology in LAUSANNE is limited to the training of engineers, architects and mathematicians. This training is done in three cycles. The first and second cycle are obligatory to the obtention of a diploma and are roughly equal to a Masters degree in the Anglo-Saxon countries. The third cycle is post-graduate training and under certain conditions this can lead to a PhD.

Active exchange is pursued for students with the USA and CHINA. The project for the USA comprises students in their third year who, instead of spending it at LAUSANNE, go to Carnegie Mellon University. The exchange scheme with CHINA is essentially for research and PhD students. The University concerned is XIAN JAO-TONG.

Not only is teaching carried on at the Swiss Federal Institute of Technology but the corresponding fundamental research as well as applied research. This research is paid for with the aid of public funds, but research mandates from third parties are also accepted.

The Direction of the Institute is assumed by a Directorate comprising 4 members. These are the President, Professor Bernard VITTOZ, the Vice-President, Professor Roland CROTTAZ, Mr. Pierre IMMER, Administrative Director, and Mr. Pierre-François PITTET, the Secretary General.

The Institute is made up of 9 Departments which are responsible for 11 Student sections. The 9 Departments are :

- Civil Engineering
- Rural Engineering and Surveying
- Mechanical Engineering
- Electrical Engineering
- Physics
- Chemistry
- Mathematics
- Materials Science
- Architecture.

The two sections of students that are trained in addition to these Departments are : Informatics and Microengineering.

While teaching and research are the main activities of the Institute, certain services also form part of an organisation such as this. They are the Computer Centre, the Central Library, the General Administration and, in addition, various commissions and committees that are set up permanently to provide the President and the Directorate of the Institute with advice and counsel.

The problem of managing such an Institute is at present aggravated by the fact that it is sited in three different places in LAUSANNE. One is the old site in Ouchy near the lake. The other is the new campus at Ecublens where the IATUL Conference is taking place, and the third site is the Avenue de l'Eglise Anglaise where the Department of Architecture is currently accomodated.

M. IMMER then cited some figures to illustrate the size of the establishment :

As of 1981 there are 2,150 students, of whom 10 % are female and 35 % are foreigners. Staff is made up of 1,220 members of whom 105 are Professors and 420 are paid by funds other than government funds.

From the financial side, the annual budget of the Swiss Federal Institute of Technology in LAUSANNE is in round figures SFrs. 125,000,000,-. These are divided up roughly as follows :

- Frs. 85,000,000,- are the Federal budget of the Institute ;
- Frs. 21,000,000,- come from other Federal services;
- Frs. 19,000,000,- are provided by third parties for research.

This sum does not include the construction of the new campus but is simply the running costs of the Institute.

The investment for new constructions of the campus is in the region of SFrs. 50,000,000,- for 1981.

In other terms, one can say that the Institute covers now some 110,000 square metres, of which slightly more than half is on the new campus.

LAUSANNE not only has the Swiss Federal Institute of Technology but also has its University. Certain disciplines are taught at both and, in some cases, jointly. These are notably : Physics, Chemistry and Mathematics. The essential difference is that the Institute teaches these disciplines from the point of view of the engineer or the applied scientists, whereas the University's point of view is that of the pure science.

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Having welcomed the participants and painted a brief picture of what the Swiss Federal Institute of Technology in LAUSANNE is, M. IMMER then said that he was not an altogether disinterested party to a conference of librarians. The reason for this is that the Director of Libraries of the Institute was responsible to him. Another thing that inspires questions that he would like to put to the IATUL Conference was its very theme. There were three questions which came to mind, notably from the point of view of the decision-maker as well as from that of the user :

- the low mobility of the methods, the slowness of change, and the cost engendered by cataloguing and indexing.

  There is difficulty in catching up with the past and difficulty in absorbing records that were previous to a change, whatever that change may have been.

  Since these problems are little understood by the decision-maker and even less by the user, should not a special effort be made to explain (i.e. communicate) with them that such problems exist and that they are a necessary part of librarianship.

- There is an individualism and a difficulty to agree globally on criterions, rules, and other norms of librarianship that are inherent to individual libraries.

Why should the same book be cataloged in LAUSANNE, in LOUGHBOROUGH, in ZÜRICH or in ROTTERDAM ? and why if the rules are well established and identical should not the cataloguing done in one place be acceptable to libraries in the others ?

If you cannot, in the short run, correct this, at least explain it clearly !

- The last question that M. IMMER put forward was quite fundamental. It was to know whether a library, particularly a technical library, could be only a supplier of information or must it be a supplier as well as a conserver of information.

Historically, libraries were buyers proprietors and lenders of books. In view of the extremely rapid evolution, why could one not envisage concentrating this mission amongst a few of them. The rest would no longer acquire books and periodicals but would simply obtain and transmit information to the end user from the one or two national centres created and purpose made to that effect.

M. IMMER submitted this last point for the serious consideration of the Conference.

If the Conference can resolve these questions by the end of the week it will have resolved not only the problems of communications amongst librarians and of librarians with the outside world, but it will have made a serious contribution to the public relations of libraries and the decision-makers to whom they are subordinated.

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COMMUNICATING WITH THE NEW ELECTRONIC LIBRARIES

Charles T. Meadow

Postgraduate School of Librarianship and Information Science,
University of Sheffield,
Sheffield S10 2TN,
United Kingdom

1. Introduction

It is not news that technology is offering new ways of operating and using libraries. Continuation of trends already begun, which have introduced such innovations as online reference searching, computer and communication based interlibrary loan systems, and computer readable data becoming part of library holdings, can lead to all or primarily electronic libraries. These changes would lead to a library fundamentally different from today's -- not merely different in the shape of the storage shelves or the mechanism for storing the card catalog. And the services offered would be fundamentally different. Technological libraries can be expected to be the first to 'go,' because they have a greater need for responsiveness to fast-changing materials and user requirements and because they have less of a tradition of dedication to classical works and their use.

2. The New Challenge to Users

If we can picture a library automated to the maximum extent that might be feasible in, say 10-15 years, we can identify at least some of the likely problems of this new institution:

1. The normal way to search for information is through a computer. I find it interesting that in addition to the impetus toward this provided by the pull of technology, there is now added impetus provided by recognition of the vulnerability of the card catalog to vandalism and human error. All file searches will be interactive, leading not merely to a faster way of doing today's job, but to a whole new meaning, for most users, of 'library search.'

2. With automated exchanges among libraries of elements of their collections and descriptions or catalogs of collections, the distinction between the collection and the catalog will gradually diminish, as will the importance of who actually 'owns' an item.

The concept of 'the collection' is, in effect, changed by the many interconnections between this library and others. We must include booksellers and publishers in the network of libraries since it is a defensible position that there is no significant difference between a fee-based

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interlibrary loan and a purchase, only one of allocation of resources and disposition of the item. At any rate, as these collection-providing and -enhancing institutions become more and more interconnected and as time to transmit an item decreases, the 'collection' of any library approaches that of all the world's collection of recorded information. This makes, for the average library user, a profoundly different kind of search problem. It is massively more difficult to deal with the world's literature than to select the best available in a limited collection. In truth, the more limited the collection, the easier the search problem.

3. The concept of a successful search also changes from the recovery of a citation to the recovery of the information whose lack prompted the search. I think this may be the most profound change for the library -- that its responsibility becomes answering the original question, not merely providing the references and materials. Again, this makes for a search problem different in magnitude from today's.

4. Electronic storage and distribution of materials, including elecronic publishing of journal articles and newspapers has slowly begun. Today, we see this manifested in increasing use of numeric data bases as part of library holdings and the occasional experiment with electronic publishing. Photocopying of bound materials by teaching staff to create tailor-made teaching materials is a practice that encourages the replacement of the traditional text book and will lead to quick acceptance of electronically stored materials.

5. As the world's literature can be searched from one place, it will come to be expected to be searched. A truly full search will become the standard.

The library user, then, will face a bigger collection than ever, a critical world (be it colleagues or tutors) who know that everything is available and expect the user to find it, and a requirement for a high degree of technical skill if he is to use this new library. The questions we are addressing, then, are those of how the user copes with this and how the library will help.

3. Using the New Libraries

From the point of view of the average searcher of the new electronic library he will probably see four major differences from what we see when we use a library.

The first of these is location. We have been hearing for years, with only the merest sign of it materializing, that library searching would in the future be done from the home or office. Very recently, we have seen projects aimed directly at home terminal users begining to manifest themselves in Great Britain, France, Canada, Japan and the United States. In Britain there are such projects as Prestel and a new electronic journal experiment called Birmingham and Loughborough Electronic Network

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Development; in France the new terminal-as- telephone-directory can result in placing more terminals in the home than any other current system. In Canada there is an improved version of Prestel. In the United States we have a newspaper, the Columbus Dispatch , being offered to readers via electronic publishing, as well as an experimental chemical journal. So, the likelihood of remote library use is no longer so miniscule.

The second difference is in materials to be searched will change in two ways: the holdings of more libraries will be available to any user and more kinds of materials will be available in any library.

The third difference is that the scope of a library search will be changing, from a search of the local library's holdings to the world's libraries, and from retrieval of surrogates to retrieval of the content of the work being sought, without the lapse of days or weeks as now required.

Finally, the elapsed time tolerated by users (and, in the academic world, imposed by faculty assignments) will shrink. As the world's literature can be searched in an afternoon, it will come to be expected to be searched in an afternoon.

In considering the technology required to bring this about, I think the outstanding feature is that nothing on the list seems very difficult to produce or to be technologically far off. The challenge is economic and behavioral. The requirements are:

1. Abundant, inexpensive user terminals, with good quality, inexpensive communications facilities. These may be taken to exist already in the United States, although better terminals and even faster communications are still wanted, and probably always will be.

2. All library indexes and catalogs to be in machine readable form. While this is by no means achieved, we are progressing toward it at a fairly rapid rate through the several systems of shared, computer readable library catalogs and the many subject indexes and booksellers' lists now routinely searched by computer.

3. Multi-media terminals and multiple-display terminals for the searcher. Today's terminals provide a rather small 'window' on the data bases, i.e. they permit only small amounts of data to be on view at any time. Future terminals are likely to have several display areas and to provide graphic images as well as text, and audio as well as video output. While technologically possible today, the expense of such elaborate terminals will retard their general availability for some time to come.

4. Better control by users of the search process, post retrieval processing of information and administration of copyright regulations. Woe unto him who promises automated copyright compliance, but the other aspects of extended user control are possible and routinely practiced in institutions other than the library. For example, accountants do not content theselves with retrieval of data, they routinely expect to process it as well, perhaps

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statistically, perhaps only to organize it into different formats more pleasing and meaningful to the reader.

5. More assistance to users. Users require, even if they do not always like to ask for, procedural assistance in the use of libraries, and there is no reason to expect this to change. They can also use subject matter help in interpreting retrieved information, which is not normally a library service. But subject matter help can be made available from various sources, such as information analysis centers, some libraries, professional societies, trade associations, government agencies, professional consultants, and tutors. Such help can be brought to the library user by including the sources in the expanded library network. Yes, someone has to pay for it, but where there is the demand, there is usually the provider.

4. Conducting the Search

Today, a library user more or less has to decide first what he shall search, or at least the order of searching the various catalogs and indexes available to him. The future searcher could start with the statement of what he wants and ask what is available to help him.

A characteristic of bibliographic searches is that the searcher cannot define his own subject mattter precisely enough on the first try to assure a successful search. Hence, the search becomes a series of trials and revisions. This is, in fact, what makes bibliographic searching such a fascinating process, and I see no reason for it to change in this respect. It is my opinion that today's library user experiences his greatest sense of dissatisfaction with the library when trying to cope with initial problem definition or when a librarian offers to help, but is unable to speak the technical jargon of the searcher. There has been enough progress in mechanized diagnostic systems; in automated interrogation of persons, say for medical histories; and in natural language interpretation by computer; that we should be able to provide our new searcher with a system that can help him to formulate his search and to understand his major options and the costs associated with each.

Hence, before he even starts looking for specific subject headings, our new searcher will have had two forms of computer assistance not now available: help in formulating his search and help in understanding what collections and catalogs search and why.

The manner of describing the subject matter, or of formulating the search, would probably best be enhanced by toleration for a greater number of ways of doing it. The so-called boolean search is not the only way to describe a subject. Other methods include weighted searches and natural language searches (which are converted by the computer into one of the other methods). The new user will use the method or combination of methods most comfortable to himself and will, at any time, have a computer

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ready to teach and explain other methods. A library search system will have a component which is a user interface, devoted to assisting the searcher to use the retieval system and, in order to know what to do, assessing his performance as he tries to use it.

Browsing remains a critically important part of information searching. Searchers like to browse not only the bibliographic surrogates but the documents, themselves. Today's typical situation, in which we can search surrogates for large numbers of documents not actually available in the library, compounds this problem. The seacher is faced with large numbers of references which he can retrieve quickly, and then he faces delays in terms of days or weeks to see the documents. To this may be added a fee for photoduplication of the item, to which he must be committed before he has a chance to be sure he actually wants it. Thus, we are at a point of imbalance now between surrogate and source item browsing.

It is technically feasible, today, though too expensive, to enable seachers to browse collections by microfilming reports and articles cited in the major subject matter-oriented information retrieval systems and to do the same within each library with the tables of contents and indexes of books. These could then be browsed from an integrated computer-microfilm terminal. If we look forward to electronic publishing, browsing the source item can actually become cheaper and easier, because its availability is simply a by-product of publishing. We have become so used to coping with the walk between catalog and book stacks, with stacks that are closed or with books that are out on loan or lost, that it may not seem to some as a problem to be overcome. But these can be quite frustrating to the searcher.

Making so much information available for browsing and reading will call for both new search techniques and new display terminals. I have mentioned that new terminals will be needed, and this is one of the reasons. Easier-to-read characters than we now usually get on VDU's are available (but expensive). Larger screens will be needed that can hold at least the printed page we are used to looking at, perhaps several of them, and the text of the conversation between the searcher and the computer -- its solicitation of instructions and his provision of them. In-view storage of pages would be desirable -- the electronic equivalent of spreading out books and notes on a table top to rapidly scan from item to item. Display of graphics as well as text will be expected by users.

If we have all this capability, then the process of taking the work out on loan can be greatly simplified. It can simply be copied onto the searcher's magnetic tape or disk, at high speed. Obviously, copyright problems intrude here, but I shall continue to assume that if those problems can be solved politically, they can be solved technically. It would, in fact, be of no particular difficulty to record who asked for a work to be copied, and to bill the person or institution accordingly.

To summarize to this point, I am proposing a searching system characterized by a wider range of languages with which to

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describe one's search objective, more files to be searched, more complex terminal and recording equipment than we now have, and the capability (and need) to extract information from text (be it words or numeric tables -- or, for that matter, graphics) for subsequent processing. I have also suggested the need to do this faster than we are now used to and possibly from the home or office, rather than the library building.

These largely mechanical changes will require two corresponding non-hardware changes. The first, briefly mentioned above, is in user control of the search process. The second, to be addressed below, is the way in which the library and its staff organize to support the user.

Query languages of today are almost pathetically weak in their ability to direct an information system to produce what the user wants, in the form wanted. They are weak even in terms of today's bibliographic data bases, but they are completely inadequate for tomorrow's multi-data base, content as well as citation, high-speed, multi-media terminal systems. The future searcher may face a task more like today's television director or airplane pilot than like today's searcher, in that he must cope with a wide range of inputs coming to him in parallel. Hence, I feel safe in predicting vastly enhanced languages for control of the system, whether natural language or complex and powerful artificial ones. Either way, the user will have to be a much more skilled searcher than he is today. These skills can be acquired in three ways: more user training, use of the computer to augment and team with the user's skill, and focusing more of the library's resources on direct user support.

Both the need for computer or information literacy and the rapidly developing practicality of computer coaches or expert systems have been covered in the literature. Let us now address the problem of the library's new role.

5. Role of the Library

There will remain problems of two kinds for the library staff, as regards the searcher. There will always be some users who do not know how to search and who need the same kind of help, from the beginning, as today's searchers do. Even the skilled searcher will sometimes need help, but his questions are likely to pose sophisticated problems to the library staff. The staff are now presumed to be dealing with almost all the world's literature and much of its data. Finding just what any one person wants and putting it in the appropriate form is a problem of immense difficulty which will fall to the equivalent of today's reference librarian. I was pleased to note such a special 'information' unit in the library of Loughborough University. The specifics of the new librarians' tasks would require more time and space than we have here, but it seems clear that the advances described will have an impact on the skill requirements of the library staff, particularly in terms of its ability to help the user solve a problem. The need for help will not disappear in the forseeable

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future.

Principally, the library must come to see its major role as that of a communications center, rather than a repository. Its primary job is to help users find and use information, not necessarily to acquire and care for it, in whatever form it may be packaged. Libraries must make their facilities more readily available to users, including to those who are not now users. Both distance and time barriers must be lowered. Many libraries are not good communication centers today and the growth of literature makes a difficult job approach the impossible. Can a typical university library, severely limited in funds, cope with the increase in materials and the decrease in time available without significant changes in its philosophy of operation? For example, for how long can libraries maintain the fiction that their reference staff can always provide the assistance needed to users of any background?

As technology enables libraries to be effectively used by remotely located users, the importance of the building must decrease, which will further emphasize the need for the library to modify its current central role.

Library staff must become as concerned with the content of information packages (currently kown as books, journals, etc.) as with their identification, description and location.

Librarians must migrate, in ever greater proportions, into reference work.

As noted earlier, the scope of the reference assistance will not be limited to the library's own collection, but to all collections; not limited to location of works, but to include location and evaluation of information within the work. The skill and education required to perform at this level will be far beyond what is generally now required.

Ultimately, the library must become an almost pure service, rather than a physical materials handling organization.

6. How These Changes May Be Brought About

While money is always an important factor in governing change, attitude of the staff is another. The major change must be for the library to come to see its principal focus not as the book or the package, but the content, and to derive its satisfaction from providing service rather than from ownership of materials.

Step by step changes should be made with the long range objective in mind. New mechanization acquisitions should be made with an eye to such matters as interface with others, ability to make use of work of others, and future expansions in use.

Inter-institutional cooperation must become a way of life. No library, save perhaps the British Library Lending Division, can declare itself independent of the need for assistance of others,

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and the BLLD exists only to provide such service to other libraries. In order to serve its users as a communications center, the library must, first, become a communicatione center within as large a network as indicated by its user needs.

7. Conclusion

In conclusion, while I share with many of my technological colleagues a long distance view of the library as a largely mechanized institution, no longer housed in a marble building, and probably rarely visited by its users, I see no diminution of the role librarians. But, there is an important set of conditions attached to that statement: no diminution of the role of librarians IF (1) they are willing to accept fairly inevitable changes and change with them, (2) they accept service rather than custody as the principal mission and (3) they accept problem-solving as opposed to package location as the goal.

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TECHNICAL MEANS FOR HUMAN COMMUNICATION

Prof. P-G. Fontolliet

Laboratoire de Télécommunications
Ecole polytechnique fédérale de Lausanne, Switzerland.

1. Introduction

The process of human communication is very complex and subtle. It has been investigated by psychologists and physiologists. Engineers are also interested in this process, in particular when they have to develop telecommunication systems, i.e. technical systems which replace direct human communication by artificial means for conveying information from one point to another, in many cases over a long distance.

The way how engineers consider the problem of communication, and especially of human communication, may be of some general interest to enlight the process of communication itself.

Engineers like scientists are used to apprehending the complexity of real problems by first elaborating a simplified model, which lends itself to some logical and mathematical considerations. The conclusions drawn out of this model are then confronted with the crude reality by means of an experimental analysis, whose results may lead to a more or less thorough revision of the model.

Thus the general models used by communication engineers to develop the telecommunication systems and networks will be presented without technical details but bearing in mind the much more complicated and imbricated process of human communication.

2. What is information ?

This question is just as embarrassing as asking for a definition of energy. Everybody understands roughly what is meant, but even engineers used to working daily with these two concepts will have big difficulties in explaining them in an understandable way.

Rather than try to define information, let us illustrate its meaning :

- information is an abstract notion
- information is conveyed by messages
- a message whose occurence is predictable and whose content is known in advance with certitude carries no information
- the less predictable a message is, the most information it carries
- the improbability of apparition of a message is a measure of its information content.

This last statement gives a means of evaluating the amount of information. For instance the letter E being much more frequently used (i.e. most probably picked out of a text at random) than an X, it brings less surprise, i.e. less information, when it appears.

3. Analog and digital information

If the source of information produces its messages by using only a limited set of n characters (26 letters, 10 decimal digits, conventional signs, etc.), the source is called digital. The amount of decision it has to take by choosing one of these n characters is defined by the expression:

$$D = 1b\ n \qquad \text{in bit}$$

(1b stands for binary logarithm)
For instance the latin alphabet has a decision content of D = 1b 26 = 4,7 bit per letter.

But a given language uses these letters with different frequencies, so that the amount of information produced by writing a coherent text, taking into account the probability of occurence of each sequence of letters and averaging over all of them, is only about 1,5 bit per letter.

Thus, the amount of information of a typed A4 page with about 3000 characters can be evaluated at some 4,5 kbit. That of a printed book of 300 pages at about 2 Mbit.

But most natural sources of information do not use a limited set of characters. They rather produce an infinity of continuous and extremely fine nuances. They are called analog.

In human communication, e.g. by voice, these two types of information are simultaneously present :

- digital information corresponding to the semantic content of the spoken words, as they were spelled out (1,5 bit of information per letter). This represents an average information flow of about 15 bit/s
- analog information representing the personality, the mood and the expression of the speaker. This very important subjective envelope conveys a lot of information which is difficult to evaluate. In commercial telephony, an information flow of about 60 kbit/s has been considered as necessary to offer satisfactory quality.

4. A simple model for an ideal communication channel

Information being an abstract concept, it has to be first expressed in a conventional way by means of a code which translates ideas into symbols or groups of elementary characters and vice versa.

A transmission of information from a source to a sink is only possible if a convention has been preestablished between them about the code to be used. If the addressee of a message does not have the key to decode it, this message is of no value for him.

Examples of such codes in human communication are the spoken and the written language, gestures, symbolic signs, etc.

In technical transmission systems the coded symbols and characters have furthermore to be converted into signals. A signal is a physical represen-

tation of information, according to a convention between the transmitter and the receiver.

Examples of commonly used transducers operating this conversion are the microphones, earphones, loudspeakers, TV-cameras, TV-screens, etc.

The principle of a transmission system can thus be represented in a simple block diagram (fig. 1).

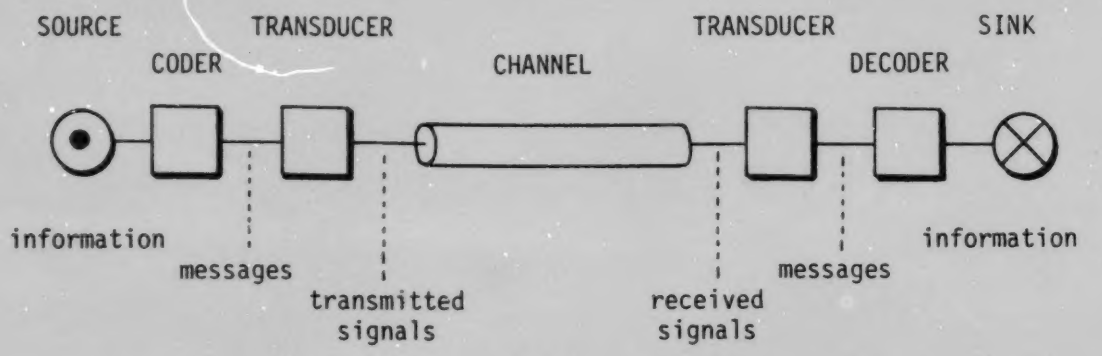

Fig. 1. Transmission system with ideal channel

The transmission channel is only concerned with signals, without considering the meaning of the information they carry. However the telecommunication system as a whole must take into account the nature of information to be conveyed and adapt the performances of the transmission to the requirements of the source and of the sink.

For instance the statistical properties of the human voice such as spectral frequency distribution, amplitude distribution and time structure have a deep and direct influence on the design of a telephone system. In the same way, characteristics of the human ear, which by the way is remarkably well matched to the voice, can be exploited to specify the required quality. A classical example is the relative insensitivity of the human ear to phase distortions which allows the wide use of an economic and simple modulation technique (single sideband modulation SSB) quite unsuitable for other transmissions such as television, for instance.

Engineers are, and must be, cost conscious. Therefore they try to make the best possible use of available channels by reducing as much as possible the redundancy of the source, that means by transmitting only the minimum amount of information compatible with the required quality. Concretely the original frequency range of the human voice is usually reduced from about 12 kHz to about 3 kHz; efforts are made to take profit out of the usually slow and restricted variations from one TV-picture to the next one, etc.

5. Model of a system with a realistic, imperfect channel

Available transmission channels such as metallic lines, optical fibres or

radio waves have 4 unavoidable drawbacks :

- they attenuate the signals
- they introduce distortions which affect the form of the signals
- they delay the signals according to the velocity of the electromagnetic waves
- they include noise sources which superimpose unwanted random signals to the originally transmitted signals

As a consequence, the received signals are not identical to those sent by the transmitted. Here a very important difference appears between digital and analog transmission :

In the case of digital transmission, the receiver knows, by means of the preliminary convention, that the source can use only a limited number of different characters. Even though the received signals are distorted, attenuated and spoiled by noise, the receiver will interpret them by comparison with the known set of possible characters and decide which has been most probably sent by the source. This decision may of course be wrong and lead to an irreversible transmission error, but in most cases within certain limits the effect of channel imperfections can be eliminated and the carried digital information can be completely regenerated.

On the contrary in an analog transmission each detail of the signal is supposed to carry information, so that the slightest deformation or degradation of signals during transmission deteriorate the transmitted analog information.

So is it also by human communication : a handwritten message may be intelligible even if the letters are not well formed or partly obliterated. The eye and the brain are able to recognize them because it is agreed that there should be letters of a known alphabet. On the other hand the every day experience shows that the expression of feelings by gestures, attitudes or intonation can be slightly or even seriously misunderstood especially when disturbing factors like bad lighting or hoarseness interfer into this analog communication.

A technical communication system must take the imperfection of the channel into account by adapting the transmission mode to the behaviour of the channel. This is done by means of an appropriate modulation which makes the signals less sensitive to the distortions and noise. By digital transmission adequate coding methods allow the detection and even the correction of at least some transmission errors.

This leads to a more realistic model of a transmission system given in fig. 2.

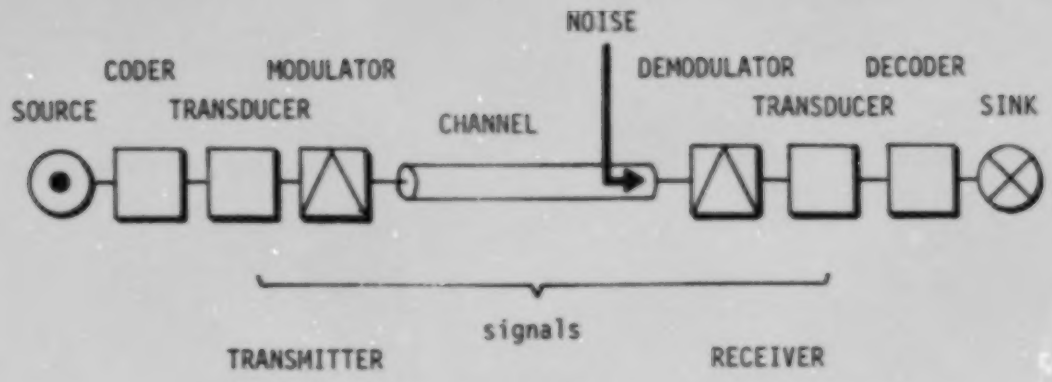

Fig. 2. Transmission system with real channel

5. Forms of communication

The fig. 3 summarizes 3 forms of communication classified according to the kind of information flow between different points.

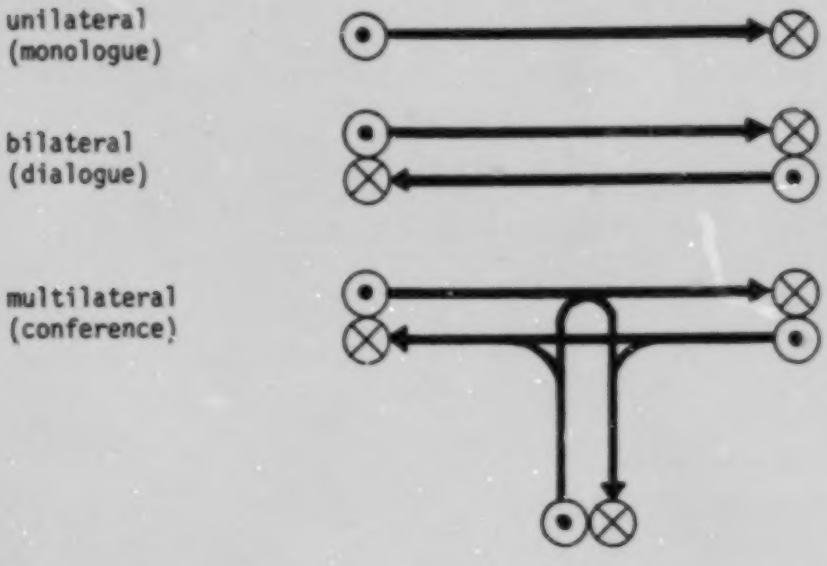

Fig. 3 Types of information flows

A communication is said to be in "real time" when no noticeable delay occurs between the production of information by the source and its arrival at destination. Technically speaking, there is in this case no other delay than the unavoidable propagation time through the transmission channels.

The unilateral communication is not sensitive to delays, since the receiver has no way of reacting on the source. There is in fact no real communication but a simple transmission in which the receiver plays a purely passive role.

On the contrary, bilateral or multilateral communications allows an interaction between partners and a true exchange of information. The alternate sending of questions and answers or actions and reactions gives rise to a requirement for real time communication. Psychological conditions have to be take into account : for instance a telephone conversation becomes troublesome when the one-way delay time exceeds about 200 ms and extremely difficult for values over 400 ms. This is a serious problem for satellite links in which delay times of about 250 ms are quite usual due to the high altitude of geostationary satellites.

In multilateral communication another problem arises : a very strict discipline is necessary to avoid conflict between messages coming from different sources. This is particularly critical by videoconferences where the receiver's screen can obviously not superpose several pictures. A voice controlled switch has then to be designed in order to distribute only the picture of the speaking partner (active source). What then if somebody else is just coughing at this moment ?

As soon as several sources and/or sinks are involved in the process of communication the concept of network appears. Depending again on the kind of information flow, 3 functional types of networks can be identified :

- a diffusion network including only one source but several, even many, receivers to which the same information is broadcasted. The communication is unilateral. Typical examples are books and newspapers, radio and TV
- a collecting network with several sources sending their information unilaterally to a common receiver, i.e. for telemetering or supervision purposes
- a switched network in which connections between sources and sinks are not permanent, but must be set up according to the expressed needs, prior to each information transmission. The communication may then be unilateral, bilateral or even multilateral. The switching operation consumes some information.

Fig. 4 gives an overview of different typical telecommunication services classified according to the above mentioned criteria.

7. Man as a communication partner

The need for communication, i.e. for relationship, contact and exchange of information belongs to the very essence of life. All living beings communicate among each other and with their environment.

The main transmitter used by man is the voice, which translates ideas into acoustical signals by means of a spoken language used as a code. But other physical means such as handwriting, drawing, gestures are also used to express information.

As a receiver the eyes are by far the most powerful means of catching information. The information flow entering the eyes is enormous, at least 100 Mbit/s, compared with that received over the ears (about 40 kbit/s).

	SWITCHED		NOT SWITCHED		
UNILATERAL (MONOLOGUE)		Speaking clock Private Pay-TV	Radio broadcasting TV broadcasting	Supervisory Alarm Time signals	> 2 PARTNERS
	Remote control Telemeasuring	Automatic wake-up system	Closed circuit Television	Remote control Telemeasuring	2 PARTNERS
BILATERAL MULTILATERAL (CONVERSATION)	Telex Data network	Telephony Videophony Telecopy	Interphone	Data transmission on leased circuits	
		Audio conference Video conference	CATV with return circuit		> 2 PARTNERS
	DIGITAL	ANALOG		DIGITAL	

Fig. 4 : Typical telecommunication services

It is worth mentioning that the information carrying capacity of a technical TV channel (90 Mbit/s) or of the standardized telephone channel (64 kbit/s) are well matched to these natural figures. However the most astonishing and until now completely unexplained fact is that the human brain is able to process only at most about 50 bit/s. It must therefore considerably reduce the input information flow and concentrate itself on the relevant information but without ignoring totally the rest of received information. How the brain achieves this is a still unsolved question. The great amount of research work invested in the development of machines able to recognize spoken sentences or to read handwritten words gave rather poor results in spite of incredible complexity. It shows clearly that the communication and the working processes in the human brain are in fact very badly known and therefore very difficult to imitate.

Another interesting, although rather alarming, property of man is his behaviour in presence of a superabundance of information. According to information theory, providing information to a system decreases its entropy. That means, roughly speaking, that the own disorder of the system will go down. It seems that man is a remarkable exception to this rule : the plethora of information lets him perplex and tends to increase his mental disorder ...

The telecommunication systems, above all the information broadcasting systems, have largely contributed to the present information flood. They have considerably reduced, even deleted, the sometimes useful delay between an event and its announcement, between a thought and its expression.

However the same technical means also give a glimpse of hope. The growing combination of informatics and telecommunication provides new means of increasing what could be called the quality of information. Information is said to be of good quality if it meets the requirements of the user. Of course we are interested in unexpected information found in newspapers or broadcasted by radio and TV. But we also need a lot of specific information in our everyday life at home or in our profession. This information exists somewhere. It is stored in books, in periodicals, in data banks. The problem consists in setting up a communication path from this information to the user.

You know this problem, because it is yours. You know what "information retrieval" means. A difficult problem indeed ! But technical means are now available which may open the doors of the traditional libraries to a bilateral flow of information, to a real communication, to an interactive exchange of questions and answers. Telecommunication engineers will provide the communication channel, computer engineers the software, but the central problem remains the organization of the stored information in such a way that it can be made available within a short time. That is certainly an important field of collaboration between engineers and librarians.

COMMUNICATION AND A NATIONAL INFORMATION POLICY

P. Havard-Williams

Professor and Head of Department of Library and Information Studies
Loughborough University

Ever since there has been a growth of professional librarianship in Great Britain there has been a concern with working together. There has also been the opposite tendency: that is, the desire of librarians and information workers to create their own special systems. The first tendency (to cooperate) has been helped by outside influences: the initiation of inter-library loans was largely due in Britain to the initiative of the Association of University Teachers in 1925. Indeed library cooperation has been dominated in Great Britain by inter-library loans, whereas in the United States and the Commonwealth countries, such as Australia and Canada, the emphasis on overall cooperation is through the development of resources.

The development of automation has been important not only for its own capabilities, but for the psychological effect it has had on the thinking of information workers. On the one hand, it has respectablised the fine detail of cataloguing systems because computerised library systems are equally if not more demanding than the most exacting cataloguing. That is, so to speak, on the 'micro' level. On the macro level automated systems have given the possibility of world-wide systems applied internationally both at an automated and at a manual level. The technology has changed the world picture of information not only quantitatively but qualitatively. Moreover, the economics of the situation has compelled not only librarians and information workers to re-examine their basis of operation: it has also drawn the interest of politicians, managers, scientists and in general the clientele of information and library services.

In Britain, there was already interest in the fifties and sixties in the development of a national public library system which was considered in an inquiry resulting in what is known as the Roberts Report.(1) This was concerned with the development of minimum standards for public libraries on a national scale, and led in due course to the creation of large systems based on country areas rather than one based on a mixture of counties, small towns, etc. The Parry Report of 1967 - the result of an inquiry on university

libraries set up by the University Grants Committee - included an important chapter on the importance of a national library. In Chapter VII, the Committee wrote:

> It has been extremely difficult for us to relate the position of the university library to the national library scene for a variety of reasons of which the fundamental one is that there is no true apex to the library system of the country. In comparison with the organisation of libraries in other countries which have a national library, Britain is especially wanting in this respect. Many of our members have studied the library systems of a number of European countries, including the USSR, and of the United States. They have been particularly impressed by the important functions assumed by the national libraries which in Britain must of necessity be shared among a number of libraries, not all of which are adequately equipped to undertake them. Firstly, it would be appropriate to describe here some of the functions which, in the opinion of the Committee, should be carried out by a national library in Britain. They will be treated under the following heads:
>
> (a) The outstanding and central collection of a nation's literature.
> (b) The most important collection of books received under legal deposit or under the terms of the Copyright Act.
> (c) The fullest coverage of foreign literature.
> (d) The publication of the national bibliography.
> (e) The national bibliographical information centres.
> (f) The publication of catalogues of material in the National Library and in the country's libraries.
> (g) The centre of inter-library lending.
> (h) The initiation of research on library techniques.
> (i) The centre of the country's international exchange service.
> (j) The centre for the distribution of duplicate material.
> (k) The centre for professional training in librarianship.
> (l) The centre for bibliographical and other assistance to libraries of all kinds.
> (m) The planning centre for the country's library service.(2)

This of course not only assumes the necessity of a national library: it assumes a library service in the development of which the national library will participate, and indicates relationships between the apex and the rest of the nation's library service. The Dainton Committee reporting in 1969 confirmed the general views of the Perry Committee and, as it were, put clothes on the skeleton proposal. It proposed a management organisation for the national library - the British Library - and also included the following:

> The Government should examine the feasibility of establishing machinery to provide it with advice on policy concerning the development and co-ordination of national information services - whether they are based on libraries or not - which are the direct responsibilities of Government departments.(3)

The recommendations of this committee were put into effect through the

enactment of the British Library Act 1973. You may be interested to know that the British Library Association (among other bodies) submitted evidence to the Dainton Committee. It if can be said that doctors should cure themselves first, it might also be said that communicators should communicate among themselves first. The exercise in arriving at an agreed proposal in evidence to the Dainton Committee on the future of a national library was an interesting example of communication within the profession. Many committees within the Library Association were involved, including the committees concerned with library and information research, university and college libraries, the Association's executive committee and others. The formulation of evidence with inputs from librarians (and information workers) with very varied backgrounds and interests was related to an extremely complex problem. There was the issue of organisation - bringing together institutions of very different historical backgrounds - and that of national policy - that of establishing a view on an overall information and library policy where none existed before. The provisions of the Act were not far from the original recommendations of the Association.

The establishment of the British Library in 1973 with its three divisions - Lending, Reference, and Bibliographical Services, based on the British Lending Library, the British Museum Library and the British National Bibliography together with the Research and Development Department (from the Office of Scientific and Technical Information) was only a beginning of a new development. The British Library itself under the wise guidance of Lord Eccles as Chairman and later Sir Fred Dainton, and of Sir Harry Hookway has flourished, and has initiated a programme of research and development - including the British Library Automated Information System (Blaise), BLCMP, SCOLCAP, SWALCAP, and a host of research reports. But it has also provoked reactions from other libraries.

Those of us concerned with the establishment of the British Library did not see clearly enough perhaps the effect of a strong national institution on the national network of libraries. We did not distinguish clearly enough between

the National Library service
and the Nation's library service

i.e. the library service as a whole. There is a danger that a strong, well-financed national library may so outshine the libraries at the periphery that professional vitality will be drawn too strongly to the centre, and that those working in responsible positions in the country outside the national library network will feel devitalised, diminished and demotivated. This

problem has perhaps been accentuated by the tendency of central government generally to fund central projects proportionately more generously than local projects. Over a period, the funding of the British Library has increased, while that of public libraries has decreased. It is probable that other libraries too have suffered - though data for that is more difficult to provide. Of course, to be fair, it must be conceded that central provision is more economical, and that if one has a new central body it is bound to take away resources from what, regarded from the centre, are peripheral services. There has therefore been a growing concern since the later half of the nineteen-seventies with the concept of a national library and information policy which embraces the national library services, the nation's library service and the organs, both in the public and private sector, concerned with the overall provision of information.

The group of national and university libraries, SCONUL, were earlier aware of the problem. There was a certain amount of groping around in the Library Association, and it was not until 1977 that a committee on national library and information policies was formed. You will recall the initial objectives of the Natis Conference:

> Information is an essential part of a nation's resources and access to it is one of the basic human rights. The formulation and implementation of a national information policy is the only way to ensure that all who engage in administrative, educational, scientific and cultural activities have access to the information they need. Priorities in the national planning must, therefore, be reflected in specialised information sub-systems.
>
> Information is not only a national resource vital for scientific and economic progress, but also the medium of social communication. The personal, vocational and social development of the individual depends on the amount, quality and accessibility of information to such a user. The ultimate aim of an information policy, must, therefore, be an informed society. (4)

The Commitee which was formed to consider the problem, has had a number of titles - Committee on National Survey of Library and Information Services, 'Survey' then became 'Review', and finally we are now concerned with 'information policy'. Indeed the Committee was concerned 'to assist and guide Philip Sewell to prepare a research project to put before Unesco for funding for a survey of National Library and Information Resources'. However, there was an immediate complication. The House of Commons Expenditure Sub-Committee called for evidence on the national development of libraries. Evidence was given by several bodies, including the government department concerned and the Library Association. The House of Commons Sub-Committee

recommended a national inquiry "to examine as a matter of urgency the whole relationship between the department (of Education and Science), national, public, university and other libraries, and the Library Advisory Councils". The Commitee found that it had to redefine its objectives. It had been set up as a think tank to look at the very complex problem of an overall information (and library) policy for the nation. It now had to respond quickly to the interest of Parliament which now saw the importance of questions raised by the Association. The Association indeed had been so successful in its submission that it had to speed up its consideration of national policy.

The consequent deliberations indicate certain problems. First, if a professional association has the political advantage it has greater difficulty in formulating policy on a very broad front, partly because it had diverse interests which require to be allowed in any statement of policy; secondly, the secretarial resources of a professional association, dependent as it must be on voluntary effort, are almost inevitably inferior to those of a government department, whose officers are devoting the whole of their time to the business in hand. Perhaps this is an over-simplified view, because in fact no one task is likely to be done to the exclusion of others. Indeed, the only effective way to progress is to encourage, and to work at, a partnership between the professional bodies and the civil service.

We in Great Britain have for reasons I have already mentioned, particularly strong professional associations. What is not so good is that we have several of them. Hence, if lobbying is to be effective, there must be a certain coordination of effort in getting the views of the Library Association, for instance, reasonably consonant with those of SCONUL, ASLIB, the Institute of Information Scientists, the Society of Archivists and other groups, perhaps more specialised. The difficulty is at once one of providing a united front on general policy, and yet, equally, providing for the development of specialist interests, and the representation of these several views in the formulation of overall policy. This does not mean that their interests will be specifically stated, but that any general statement will not conflict with their interests. It was with the importance of providing a joint proposal to the House of Commons Committee that, as Chairman of the Committee, I invited with the concurrence of my colleagues representatives of the other bodies in the library/information field. These included Aslib, Institute of of Information Scientists and the Standing Conference of National and University Librarians. These in due course submitted memoranda of their own

to the Parliamentary Committee but initial discussion together meant that the evidence though different was not contradictory.

We have felt the challenge of providing evidence for an active, and really national body, taking in the whole of the United Kingdom, which would

(1) review the relationship of the national library with other libraries;
(2) study the library implications of changes in national policy;
(3) determine national priorities and allocate resources to meet them;
(4) rationalise existing provision;
(5) review the balance between service resources and consumers.

I have not mentioned a further event of importance, viz. the Public Libraries Act of 1964. Under that Act, there were set up Library Advisory Councils for England (know as LACE) and Wales (LAC-W). They have found themselves in an evolving situation, in which the objectives for which they were established have changed. The Library Advisory Councils have remained public library orientated - as they were bound to, established as they were under the terms of a Public Libraries Act - while concern has moved to a more complex consideration of the relations among libraries especially those in the public sector. Government libraries, academic libraries, national libraries, public, libraries, research libraries, (given the scarcity of resources at the present time, and the increasing cost of library and information services) can no longer be considered as separate entities. The need for a national system is there. The difficulty is not only that the Library Advisory Councils have been public library orientated, but also that they are 'advisory', so government departments and others can, and do, ignore their advice. Furthermore, there are separate Councils for England and for Wales, and different types of body for Scotland (a committee of the National Library) and Northern Ireland (a non-statutory committee). There is therefore no body which has 'teeth', and which can make recommendations which 'stick' for the United Kingdom as a whole. In our setting in Britain, one of our concerns has been that there are bodies for England, Wales, Scotland, and Northern Ireland, but none for the United Kingdom. Professional opinion is that we need such a body, but we have to prove it to the politicians and the civil service.

The profession then sees the problem in Britain as four-fold:

(1) The development of a really national policy in information and library services.
(2) The formation of a United Kingdom body which can consider problems for the country as a whole.

(3) The communication among the relevant pressure groups to ensure a comprehensive solution.

(4) The creation within the profession itself of an overall view which sees libraries and documentary information in the broadest context of the communication and information industry as a whole.

The impact of professional opinion is seen in the recent House of Commons report and in the numerous documents submitted to the Committee, including 'A National Review of Library and Information Services' 'The Future Requirements of Computer Users' 'Information Retrieval in the 1980's' and others produced by the Library Association, the Library Advisory Council document on the 'Future Development of Libraries' etc. etc. The principal Library Association document lists the functions to be performed by a central planning and coordinating body:

(i) Advice on the allocation of resources to different sectors of librarianship.
(ii) Determination of manpower requirements.
(iii) The collection, analysis and presentation of statistics.
(iv) The monitoring of norms and standards.
(v) The co-ordination of research.
(vi) The stimulation of innovation by development funding.
(vii) The rationalisation and standardisation of the automation of library processes.
(viii) The development of automated data-bases both in this country and abroad.
(ix) The creation of a national network of reference libraries involving the designation of regional reference libraries and the development of centres of excellence.
(x) The development and maintenance of a national system of transport for library materials.
(xi) A national plan for the storage in regional and national centres of little used library materials.
(xii) To act as a national centre for the country's library and information services in relation to international developments.
(xiii) To serve as a forum for contact with the book trade.(5)

I see library associations as performing a positive role in presenting their case to Government - ministers, members of parliaments, state governments, public servants, the general public. In the United Kingdom we have developed quarterly meetings with the minister concerned, contacts with interested members of parliament, regular meetings with the appropriate civil servants, consultations with local government associations and with trade unions. Libraries in general talk too much to each other and not enough to influential policy makers. The way needs to be found to do it, when it does not yet exist.

But this process depends on the disinterested voluntary work of experienced

leading members of the association. It will also depend on the harmonisation of widely disparate views of the numerous groups who find common cause within the association. This will be possible only if there is an effective organisation which makes communication easy for groups widely distributed over a large area - this should be relatively easy since we are in the communication business. It is possible only when there is a significant number of members - every statement we issue begins with 'The Library Association is a chartered body representing all kinds of libraries with 25000 members'. A missionary attitude to the promotion of library and information services and to the recruitment of members is needed. And lastly the development of a professional outlook and ethic is necessary to sustain the effort to keep pegging away at the problems we face, acquiring the resources for the services in which we believe to be for the benefit of our society.

What then were the results of these consultations, and of the evidence which resulted and how was it arrived at?

Between January and July 1980, the Select Committee on Education and Science and Arts heard oral evidence from a number of organisations and individuals, who represented the British Library, the Office of Arts and Libraries, the Standing Conference of National and University Libraries, the Library Association, the Institute of Information Scientists and Aslib. They received memoranda from these organisations and from the National Libraries of Wales and Scotland (who were also brought into the discussions by the Library Association) the Royal Institute of British Architects, the South-West Academic Libraries Cooperative Automation Project, the London and South East Library Region (LASER), the Publishers' Association, the International Association of Music Libraries (U.K. branch), the Scottish Libraries Co-operative Automation Project, the Society of Authors, the Association of Database Producers, the Booksellers' Association, and the Trades Union Congress.

The recommendations of the Committee were coloured by the original topic which it had decided to consider, viz. Information and Storage in the British Library service. This had started as applying specifically to the British Library, but had broadened as the Committee realised it could not consider the British Library in isolation: it had to be considered not only with the National Library, but with the nation's library service. The purpose of the enquiry was to examine the current state of access to full and timely

information, and to understand the impact of the technology of information handling. They were concerned to examine the changing pattern of library information storage and retrieval services and the contribution new technology could make. Not only did they have to expand their enquiry to take account of library services as a whole: they found they could not consider libraries in isolation.

They considered then not only authors and users of information, but also the producers of data bases and the equipment connected therewith. They also realised that a wide-ranging investigation into overall information policy, was in their own words, overdue, and they took cognisance of the somewhat timid investigations of the Library Advisory Council resulting in the report, in 1979, on Future Development of Libraries. They also considered problems of siting of the new British Library building and of copyright.

However, their principal concern was information provision -

> The economic future of our country depends on accessibility of information to those who make the vital decisions. This need for information in all walks of life within the UK, both to enhance the quality of decisions made within industry, commerce, public administration and elsewhere, and to enrich the life of each individual, is increasingly recognised.(6)

The Committee also recognised that many agencies are involved in the provision of information. Quoting from the evidence of the Library Association and the Institute of Information Scientists, they state

> "The information retrieval field involves producers such as ink and paper makers, printers, data base producers, computer firms, publishers; it involves intermediaries such as information scientists (concerned with documentary information in its widest sense), librarians, information officers (concerned with journalism or public relations), book sellers and computer bureaux." The common interest of the field of information provision "is in marshalling and segregating facts, figures, opinions, other data and documents for 'end users' - that is, consumers, managers, administrators, politicians, scientists, technologists and advisers who have a latent or an expressed need for specific information". Much of the available recorded information emanates from the publishing industry. In this country, some 400 publishing companies are represented in the Publishers' Association, and are together responsible for over 90 per cent of the total turnover of the UK book publishing industry of approximately £800 million per annum.(7)

While the Commitee found that library cooperation was well developed in the United Kingdom, they realised that cooperation was not enough.

> '... there is need for the formation of a national body to formulate policy and coordinate UK library and information services.'(8)

This view is supported by several of the bodies submitting evidence.

Furthermore, the whole problem is complicated by the 'new technology' -

> There are three key components of the new technology. First, new ways to store information compactly and cheaply - photographic microforms of various kinds, magnetic storage on tapes and discs, optical storage and video discs, holographic memories. Second, new mechanisms to manipulate, scan and search such stored records - the large-scale computer, the minicomputer, the micro-processor and related devices. Third, new facilities for cheap and rapid transmission of information over long distances - telecommunication systems and networks. Above all, it is the integration of these components into a new compound - "telematics" - that is revolutionising information transfer.(9)

In addition, another government report on information technology has also indicated that there are three aspects to information technology - the hardware, the software and the development of both for the development of information. Libraries are not alone in acting as an infra-structure for information. Library and information services have access to immense files of bibliographical records, with numerous bibliographical (and other) data bases available.

These new developments the Commitee saw 'as supplementing but not replacing conventional library services'. Library and information services will therefore use a mixture of materials - books, journals, microforms, discs, films and automated data and may use terminals for access to bibliographical data, directory information, and facts or texts. They are already providing local data for services such as PRESTEL.

All this makes an excellent case for a national network, and the aim would be to make bibliographical and information resources more readily available to users -

> ... and to achieve this as economically as possible by the planned coordination of resources by both users and producers.(10)
> We recommend the development and co-ordination on a national basis, of an automated network system.(11)

They also recommend a Minister of Cabinet rank to take responsibility for information policy and a Standing Commission representative of a wide range of interests concerned with the telematic information. The Commission would be a permanent body to guide the coordination of information network(s). Coordination is needed -

> (1) Technical requirements that should be met by the message delivery system, to give the flexibility needed for all its

potential users, without restrictions imposed by existing record formats.

(2) Aspects of the organisation, presentation, transmission and retrieval of information in which standardisation is needed.
(3) Review of information sources whose linkage to the network should be encouraged.
(4) Relations between the component institutions participating in the network.
(5) Research needed to facilitate network developments.
(6) Review of international developments and their impact on national networking.
(7) Education and re-education needed to enable information users and those working in information provision to adapt to the new technology.(12)

This is an important list, but the response so far to the Library Advisory's Council is limited. The Ministers response to proposals to date indicate he is prepared to hold talks with other governments and interested bodies; to talk with the Department of Education and Science with regard to the responsibility for the Inter-Departmental Coordinating Committee for Scientific and Technical Information; to appoint a Library Adviser as secretary to the Library Advisory Council (in practice a reduction in the manpower available); to prepare an annual report to Parliament. There is still, with the change of government, good will and an intention to follow the path of development. There are however no further manpower resources, and until there are, the Library Advisory Council will continue to be the 'eunuch of Waterloo'. There is need for considerable political effort on the part of the Association, and every use must continue to be made of the channels of communication with the minister, the civil servants, and parliament. This can be only an interim report, and represents limited success. Much remains to be done.

REFERENCES

1. Great Britain. Ministry of Education. The structure of the Public Library Service in England and Wales (Chairman: S. Roberts). (Cmnd. 660) London, HMSO, 1959.

2. Great Britain. University Grants Committee. Report of the Committee on Libraries (Chairman: T. Parry), London, HMSO, 1967. p.81

3. Great Britain. Department of Education and Science. Report of the National Libraries Committee (Chairman: F.S. Dainton), (Cmnd. 4028) London, HMSO, 1969, p.xiii.

4 Unesco Intergovernmental Conference on the Planning of National Documentation, Library and Archive Infrastructures. Final Report (COM/MD/30) Paris, 1975, p.25.

5. Library Association. A national review of library and information services (Chairman: P. Havard-Williams), London, 1979. p.4.

6. Great Britain. House of Commons, Session 1979-80. Information storage and retrieval in the British library service. Fourth Report from the Education Science and Arts Committee (Chairman: C. Price), London, HMSO, 1980, p.vii.

7. Ibid. p.viii.

8. Ibid. p.ix.

9. Ibid. p.x.

10. Ibid. p.xiv.

11. Ibid. p.xviii.

12. Ibid. p.xix.

INFORMATION SERVICES - AN OVERLOOKED COMPONENT IN THE THIRD WORLD DECISION MAKING PROCESS - EXPERIENCES FROM UNESCO MISSIONS

Björn V. Tell

Director of Libraries, Lund University, Lund, Sweden

Scientific and technical information - for short STI - is made by and for people. It is also one of the strategic resources on which modern society is based, and increasingly, that resource is becoming decisive in the industrialization process. The overflow of information that can be witnessed is a sign of the growth of the so called knowledge industries in the industrialized countries. The masses of STI which are stored in data bases flow freely over the borders in search for users.

The insight that knowledge taken in the widest sense is recognized as a productive force which depends on the ways it is generated, diffused, analyzed and evaluated, has not come to surface in the Third World countries. Contrary to the industrialized countries the policy makers of the less developed countries - the LDCs - seem to imagine that the STI stored in publicly available data banks differentiate between people's belonging to one nation or another. They have not realized the opportunities the new technology creates to cope with their immediate information needs by taking advantage of the information transparency of the industrial countries by using modern communication facilities that will work even from their remote locations.

Few of the LDCs realize that knowledge and STI could transpire out of libraries, information services, specialist groups or government advisers. Instead, librarians and information specialists usually have low status in the LDCs, and we will examine that. The low status label also sticks to the international experts on missions, even if such missions have been agreed upon and set up by a government and an intergovernmental organization, such as Unesco. When the findings of the expert are reported to Unesco, recommendations to the government are worked out in conjunction with the country representative. However, these recommendations seldom sensitize the policy makers in the same way as, for instance, the advice of vendors of hardware or equipment.

These observations made on several occasions in the LDCs give rise to thoughts about more efficient approaches to bridge the knowledge gap in dealing with the developing countries. That information activities should be regarded as a lower type of work calls for a review of the means of communicating the significance of information services.

The present message might be wrong. The traditional talk about libraries and information services as providers of scientific and technical information does not ring a bell in a ruler's mind. The expert may require an information support service to himself in order to be an effective adviser. We may, therefore, look back in time for some particular events that triggered the STI development, the introduction of the new technology and the rise of librarianship in our own countries.

Forecasting studies.

A striking feature in the LDCs is the short planning periods. Usually, we find three or five-year plans which more can be regarded as being of a fire-fighting nature than real plans for development. The priorities set on agricultural development, health services, literacy, industrialization, etc., give little room for an STI policy embracing research libraries and documentation centers.

In the industrialized countries the planning period is longer, and there have been a number of forecasts and projections to support the policy makers when it comes to STI development. We might recall the impact the Weinberg report made in 1963 both on the US Government and on many others. It certainly opened the policy makers' eyes about the importance of STI. Later on the OECD member countries were conditioned by the work done in its Information Policy Group - OECD/IPG - and all the studies and reviews made there. For instance, the Anderla Report "Information in 1985" was just one of many similar studies published about the information needs and the new tools and resources for filling these.

Especially noteworthy were the Delphi studies carried out in the 60's by Japan and Sweden. Even if the Delphi technique originally was designed to structure systematic interchanges among experts in order to produce the greatest possible convergence of minds in a consensual estimate, the repeated feedback also gave those policy makers who were involved a possibility to discover the prevailing trends in the forecasts. That made them biased to accept the forecasts as projections needed for their planning. Together with the Diebold study about the computer explosion, these Delphi studies gave the policy makers the opportunity to recognize a pattern which they wanted to see implemented by their planning.

It has to be remembered that the Anderla study had a time span of 15 years up to 1985. At the same time Japan made forecasts about the information society year 2000, far beyond the time horizon that usually is set by planners in the developing countries. At a seminar for politicians and high-level decision makers[1] the author carried out a Delphi study in Australia in 1973. A number of questions, taken out of the Japanese[2] and Swedish[3] studies concerning the future developments in the information handling field were considered by the participants. That study aroused much interest, especially when

the participants saw that they on the average put their time horizon well 10-15 years further into the future than their Japanese and Swedish counterparts. As an example can be mentioned the Australian prediction that a "nation-wide digital network for integrated information storage and retrieval" would be available around 1990, while the Japanese and Swedish estimates focused around 1983. Now we can notice that the forecasts have been overtaken by the events. Sweden had the SCANNET[4] operating in 1977, and the AUSINET[5] was a reality before the end of the 70's.

The Delphi study was meant to put the seminar participants into the situation of a decision maker who has to foresee in order to plan for actions. It also created an awareness among the participants about possible and alternative futures. Achievements such as AUSINET and SCANNET would not have come about if there had not been insights in government circles about what was necessary in order to fill the information needs and what was practically possible. The decision makers got on with the business at hand and took action to the benefit of their countries.

At a meeting in Kuala Lumpur in 1976, the author tried to create an awareness by arranging a Delphi study of similar nature among librarians. He had happened to reach a consensus among the decision makers and the librarians about the establishment of a telex network as a pilot project.[6] But nobody in the government circles believed in the Delphi technique, nor in such a subtle concept as "well-informed ignorance" which is a prerequisite for success. So the librarians who finally did the study put the time horizon well beyond their own retirement ages, not because they were not aware of that the technical events could happen, but because they knew about the slow decision making process they had encountered in the government when dealing with their problems.

Scenario writing

A government adviser would not do a good job if he did not make efforts to seek to transform a forecast from a piece of information proposed in a Delphi study into the decision making process of the government. One way of doing so is to confront the decision makers with a scenario that shows a future that is attractive. The difficulty is to write the scenario so it fits into the decision maker's own frame of reference. Many times the adviser lets his own frame of reference about possible futures take overhand and that often creates a serious knowledge gap.

In the policy maker's view a forecast or scenario is only useful when it helps him to arrive at a decision that maximizes his goals. The contribution of a forecast lies in how authoritative, attention-paying, and credible it is, and what service it offers to the country from the view of the policy maker's position, or as William Ascher[7] puts it, "forecasting serves as both 'intelligence' and 'promotion' for the policy maker".

Writing a scenario for a developing country may not be difficult, because events that already have happened in the developed countries may be natural ingredients. The problem is to overcome the additional effort needed to put the scenario into the framework of the country under study, to label it as a piece of "intelligence" so it may be accepted as a probable outcome of a course of action, if taken by a decision maker who wants "promotion".

The scenarios that have been drawn up for '1984 and beyond'[8] in the Western countries have dealt specificly with the growth of the knowledge industries. It is assumed that a country in the post-industrial stages of economic growth must have strength in its universities, research laboratories, libraries and information services. When this insight is transplanted into a scenario for a developing country, it is often ignored that the most important information to be taken into account is that which has been generated within the country itself. For that reason it seems difficult to talk about the need for library development, when the decision maker from first-hand knowledge finds that all the research results which have been produced endogenously, do not reflect a specific need for libraries.

If the STI production of a developing country has a national impact, even if its references to Western sources only deal with obsolete materials, how then identify the need for STI of more recent dates from foreign sources? How motivate information services as necessary for the development of the backward society?

A few of the OECD member countries were at such a stage a few decades ago. At that time OECD had finished a round of country reviews about their science policies. It seemed logical to do the same in the information policy field. Such reviews were undertaken in countries such as Canada, Federal Republic of Germany, Ireland[9], Spain and Switzerland. These reviews under the umbrella of OECD were of importance to create a deeper understanding about the STI problems and ways of solving them. In the interest of the country the authorities often produced background material and statistics on beforehand to the reviewers. When the review team was there, many questionable matters had already been straightened out.

Even if some of the developing countries have been scrutinized by review teams from the United Nations in the science policy field, that review method has hardly been used in the field of STI policy. There is a noticeable lack of fundamental statistics about various STI indicators in the developing countries. Thus, when an international expert meets his counterparts, he astonishes them by seemingly knowing more about their conditions than they do themselves. It is evident that on beforehand he tries to browse through pertinent books, articles, reports and other kind of information sources that easily can be retrieved in the industrialized countries, while the difficulties to get an overview in the country

itself is tremendous. For instance, by running around in various offices of Unesco or the United Nations Headquarter, it is possible to get a comprehensive view of a country by scanning the many reports from earlier missions in the same or neighbouring fields. That fact astonishes the local administrator who a priori believes that the outside expert is an ignorant.

From his gatherings the expert can include some salient features pertinent to the country in his scenario. That would infer that the expert has to his disposal an intelligence support system that the country would benefit from if the policy maker looked closer into the matter. However, as has been said above, such things as libraries and STI have low priority in the LDCs, and the importance of an information support function in the administrative quarters for better decision making is not recognized. It should be mentioned that in the mission to Malaysia[6], the telex network eventually materialized after heavy pushing and support from Unesco. However, soon afterwards a multinational computer company sold the government on a computerized management information system as a fashionable gadget for the decision makers in the upper levels of the government.[10] Presumably, the visibility of a big computer triggered that decision. Compared with the difficulties encountered to introduce the telex network between the most important research libraries, the decision to install a MIS in the government seemed trivial. In the following some conclusions from the above will be drawn.

The need for a new expert vocabulary

Encouraged by Unesco and the United Nations many of the developing countries are establishing infrastructures in the STI field that mimic the traditional pattern developed over the century in the industrialized countries. Thus, in many developing countries we are watching the establishment of old-fashioned libraries, documentation centers and archives, the hiring and training of traditional librarians, etc. However, the establishme nt of such an infrastructure is a lengthy process as we have experienced from the development in the industrialized countries. With regard to the time it takes to arrange such an infrastructure and to get it operational, it is astonishing that the developing countries, especially the LDCs, are buying these concepts, and do have patience to sit and wait for the information that might come out of it. They seem to ignore the potentials offered by the new technology of quick and comprehensive information transfer.

If time is important in the development process, the policy making and the organizational pattern to achieve changes in the provision of information must be reconsidered in light of the present trends. The installation of a telex in the very room of the university vice chancellor, instead at the switchboard or in the library is not an uncommon view in the LDCs. That shows that other status criteria are prevailing. To come to grip with the low status of libraries and librarians the government of India in the 50's recognized a

higher caste in the civil service, namely documentalists. That there is a normative barrier for librarians shows not only in salaries but also that government officials are not accustomed to accept ideas from librarians. A librarian is just a person putting up books on shelves or giving them out on loans, a sort of 'semi-profession' that furthermore, amongst its practitioners has a majority of women. In the eyes of the LDCs' administrat ors that immediately gives the profession a low status.

The policy makers cannot imagine that their aspiring ideas of a rapid social and industrial development by a better STI transfer could be linked to a profession that seems to be a natural occupation for women. They ignore that the profession has changed over the years. Earlier, librarians were in great esteem in the Western countries, and recently library work has got new dimensions. The policy makers of the LDCs seem never to have experienced the assistance given by scholarly librarians, nor their present day interaction with on-line services, and their screening competence on certain matters. The earlier subserviant attitude of the librarians, emphasized perhaps by the 'female touch'[11] that the policy maker might have experienced himself during his study years abroad, is nowadays confronted with the professional authority of a subject librarian who sits down with the user and on equal footing performs the interaction with the on-line data bases, not so much trying to make available what the user wants, but more what he needs.

If these administrators went back in history, they would observe that librarians often have served governments in a most efficient way. One of the richest nations, Denmark, had a ruler who with great success used librarians as intelligence officers. During the Napoleon wars he found out that his government and the Swedish one had taken opposite sides. As he did not know about the intentions of the Swedes and their troop movements, he felt the need for a few learned and intellectually well fitted men who in the disguise of scholars could uncover the information he so vitally needed, thus playing a game he had played with success at an earlier occasion. He chose three librarians at the Royal library who were tested on their intelligence competence to undertake the delicate task to go to Sweden and find out.[12]

After a few days in Sweden they could report on the intelligence matter to the King that he had nothing to fear from the Swedes. However, the Swedish intelligence[13] found out about the real purpose of their visit, but in view that they were scholars, they were expected to contribute more culturally to a good understanding between the two countries, than just to send trivial spy bulletins. Therefore, they were allowed to move around freely and contact influential people around Sweden. Both the Danish King's and the Swedes' judgements about them showed to be correct. Their contributions to increase the knowledge about the early history of the Scandinavian countries have had great cultural impact, so Sweden honoured them by memberships of the Royal Swedish Academy of Letters, History and Antiquities.

That example teaches us that librarians can serve as a most effective tool for what we can call political and scientific intelligence in a broad sense. The other thing to be observed is that these librarians had to travel as aliens into the foreign country to pick up the needed information. The new technology was not yet invented, so they could sit at their desks and find out about economic, political, scientific and technological informati on as their presentday colleagues can. These essential facts seem to be ignored by the decision makers of the developing countries.

The concept 'librarian' in the ears of the policy makers of the LDCs does not give the connotation to a profession that has the potentials to create a national knowledge resource to serve as a sort of intellect augmentation, or a 'brain-ware' as T. Kitagawa[14] calls it. Therefore, Unesco and we may be wrong in our approach, as a change in the apprehension of the profession in the LDCs is needed. To that comes the need for organizational changes if the establishment of a knowledge store is going to be an efficient vehicle for knowledge transfer.

That problem is not one solely for the LDCs. Recently the Executive Office of the President, Washington D.C., felt the need to install an information support system, and its protagonist Richard Harden[15] has indicated areas where the information processing techniques can be used in the LDCs to make executives and policy makers more information efficient. According to him the greatest potential probably lies in the rationally organizing of the information these individuals need to access, why he uses the concept 'personal information support services'.

Such forming of new concepts is not an isolated feature. William E. Colby,[16] earlier head of the CIA, has also stressed the necessity in the developing countries to train what he calls 'information industry cadres' : "The objective would be to leapfrog the development process in the same fashion that a satellite communications system can avoid the lengthy and costly process of developing land cables and wires throughout an underdeveloped country. In the same way the computer can replace legions of clerks in assembling, sorting and cumulating millions of facts, allowing the human talents of the clerks instead to seek higher education and more productive lives".

OECD that always has been in the forefront of concept forming, has also launched some concepts earlier found in the vocabulary of Steven Dedijer,[19] Lund University. At a OECD seminar in 1980 about the role of the knowledge industry and the intelligence function in development, the concept 'social intelligence' was picked out. According to Dedijer we can witness the rise of a social intelligence in all social systems, and it seems that time is ripe for the establishment of a social intelligence function for rulers. That concept is also found in the writings of Yehezkel Dror,[17] who talks about the concept 'a comprehensive strategic intelligence for rulers'.

The interesting thing is that Dror deals with the decision making process on the very top level. Librarians may learn much from that in order to improve their methods of approach. Also, it is significant to note that another social scientist, Frank T. Pearce,[18] has studied how to influence managers of organizations with a variety of size, fields and functions. In this endeavour he uses the concept 'management intelligence system'. We infer from these recent writings that any formulation of a general approach to the information transfer problem in the LDCs, and the use of the new technology, also needs a set of new concepts of the nature above, including forecasts and scenarios.

The organizational problem

A tool-kit of new concepts is only part of what is needed for a more action oriented thinking in the LDCs. As important is the organizational aspects whereby the concepts are transformed into decision making. As has already been said, one essential aspect is time. The building of libraries and documentation centres is example of temporally extended events. The rulers of the LDCs are conscious about the need to make fast progress in various fields. Time is for them a scarce resource. They cannot wait for the lengthy process of establishing an infrastructure of libraries, documentation centres and archives in order to get the knowledge store ready for development.

As the role of time is important in the development process, the policy making and the resulting organizational pattern to achieve changes must be reconsidered in the light of present day trends. There is a trend now that researchers, more than librarians are taking advantage of the increasing availability of information products which allow them to identify articles, conference papers, technical reports, etc. from their own terminals, without having access to a library collection. Furthermore, just by pressing a button they can receive by airmail from anywhere in the world the wanted documents. The DIALORDER of Lockheed DIALOG, the ASCAMATIC of Institute of Scientific Information are just examples which are supposed to be followed by more data base brokers. These services give the individual the opportunity to have new articles from a great variety of journals on his desk by airmail within a few days. Also, the open availability of cheap photocopies from hugh stores, such as the British Library Lending Division, acts in the same direction, namely to change the need for extensive library collections in the LDCs.

The state of affairs is worth considering when advising the counterparts in the LDCs. The problem is how to advice upon a development so the country does not close the doors to the future by too heavy investments in obsolete concepts. The experience shows that when administrators and librarians in the LDCs are confronted with the modern technology in practical demonstrations of its viability, it is believed to be too sophisticated on one hand, and on the other the decision makers only take into account the costs, thus, look upon it as something they cannot afford because of what they see as

heavy financial considerations spent on low status librarians. They do not relate it to the substantial budgets for buying books and journals, shelves or catalogue cards. When it comes to purchase a telex or a terminal, or to pay the bills for overseas calls, database royalties and airmail service the expert often faces a stone wall of ignorance and reluctance to pay.

Both policy makers and librarians in the LDCs, therefore, hesitate in front of the quantum leap they could achieve in the information provision by using the new technology, because of the immediate visibility of the cost of information. They seem unable to think in time as a resource and information as something you have to pay for. That is particularly obvious if you as expert try to find out about what recommendations have been made lately by advisers to the country. Looking through all reports and considering the recommendations given, is often a sad reading. Repetitions from report to report are numerous, but perhaps, unavoidable, since little action results. However, in some cases a country could have had an excellent 'social intelligence function' installed and paid for only from all the costs that these repeated missions have incurred during the years.

Why have all these recommendations by an intergovernmental organization such as Unesco to the governments not been taken up for consideration and resulted in action? That is a query linked to the state of undevelopment. First of all, the undeveloped pattern of agriculture, rural development, health services, literacy and education is demanding priority action of a 'fire-fighting' nature spoken of above. Therefore, such things as libraries and scientific information are given low priority both on national and local levels. The importance of an information support function in the administrative quarters for better decision making in all the above fields is not recognized, because the recommendations are not spelt out that way.

Another impeding factor is the ambiguities by which the experts often express themselves on matters about information transfer by terminals and the new technology. Even in such an excellent study as that by J.H.d'Olier, Documentation, libraries and archives, published by Unesco in 1975, such ambiguity is shown, namely: "Modern information methods are often too sophisticated to be used without modification to meet the needs of universities, of the public and even of the technicians". A policy maker gets the impression that he better conforms with Western traditions and proposes the establishment of libraries, whereby he can choose the size and the costs according to elaborated formulas without questioning the rational behind and the change of time. By keeping to the mainstream of the information flow to society, he does not even question if he may block the road to an alternative development that will come rather rapidly. Whilst nobody can disclaim the merits of building traditional libraries one must question the wisdom of that strategy if time and resources are taken into account.

Another questionable approach was brought forward at the UNCSTD meeting in 1979 when the developing countries demanded a new 'Global Information Network' which would facilitate the transfer of scientific and technological information to the Third World. As Ziauddin Sardar[20] points out, such a network demand is irrelevant because much of the information the developing countries seek can be retrieved in many countries around the world simply by using a small portable computer terminal and the telephone network on dial-up basis.

It is obvious that the development of an information capability is an endogenous matter. A nation has to set it up to meet its own intelligence needs, and the only important matter is how to go about and not block the road to the future. An interesting example is the development of an intelligence function in the field of energy and mining that has taken place within a ministry of a developing country, Venezuela. It has to be noticed that the function is located near the top-level echelon of the government.[21] By allocating the library function near the minister, the status level of the librarian is high.

The tasks carried out in the ministry ranges from trade pact negotiations, foreign aid transactions, licence purchasing, major systems purchases, hiring of consultants and their utilization, national equity agreements, catastrophies and disaster alleviation agreements, state and privately owned enterprises, foreign technology transfer, domestic technology transfer, joint ventures and cooperative endeavours technology transfer, in all, activities where ignorance can be costly or disastrous for the economy. The use of on-line communication to overseas data bases is a routine matter.

To strengthen the information capability, several information analysis centers and service units have been set up at divisional and sectional levels within the hierarchial structure of the ministry. Together with the central library and the computer center they form an internal information network primarily to support the information requirements of the ministry. The analysis centers are important as serving the 'intelligence function',[22] and by their work forecasting and planning are made on more firm information basis. Like the Danish King, mentioned earlier, the minister has chosen the librarian as manager for this important activity.

If more ministerial networks were set up by a government, we could talk about the establishment of a social intelligence function for development. Such a function in one country could be given the opportunity to work with similar setups in other developing countries. Many of the LDCs would benefit from pooling their resources on a regional basis in order to avoid the necessity of duplication in the national systems. A sharing of experiences in the social intelligence field might also shed light on problems and alternative strategies to cope with the development problems.

The challenge for the information experts who are serving as consultants in the LDCs, is to create an awareness about the new technology and its potentials. It can be foreseen that satellite communications and full document delivery by broadband communication worldwide will come rapidly. The developing countries will one day be involved in it. The message to convey to the rulers is to be more alert to these new trends than to set up infrastructures of conventional kind. There is not much in the books of Unesco about that, nor in its guidelines, so perhaps, Unesco should be given the advice first.

Conclusions

The conclusion is that in our talks with the LDCs we need to use a new vocabulary in order to introduce new concepts, such as a 'social intelligence function', i.e. a capability to tap and analyze the world's knowledge repositories for policy making. The American and the Venezuelan examples above show that the organization of such a function should take place in the government or in the ministries by utilizing librarians and the new technology in order to access information of importance to policy makers. Many young librarians and subject specialists should be trained to form the 'information industry cadres' that the LDCs are so short of.

The learning process for utilizing terminal communications is extremely short, and the cost/benefits can easily be assessed when such a new way of acquiring knowledge is started up. Realistic and pertinent forecasts about development can be drawn up for the planners. As at the end, time may be the most scarce resource of the LDCs, it is important to take advantage of the present situation, especially when it comes to close the knowledge gap.

1. VAUGHAN, John, ed., National information policy and the impact of social and technological change on national information planning. An advanced Working Seminar, Apr. 16-18, 1973. Canberra, National Library of Australia 1974. 157 p.

2. Science and technology development up to 2000 A.D. Tokyo, Japan Techno-Economics Society 1972.

3. Information, documentation and media. Report on a Delphi study. Stockholm, Swedish Agency for Administrative Development 1971. 34 p,

4. ABRAHAMSSON, Sixten, SCANNET inför 80-talet.T Dokument 34, 1978, 6 pp 110-11.

5. National Library of Australia. 19th Annual Report 1978-79. Canberra 1979, pp 8-9.

6. TELL, Björn, Pilot project on the development of a library network. Malaysia. Paris, Unesco 1976. 30 p. (RP/1975-76/4.221.3)

7. ASCHER, William, Forecasting. An appraisal for policy-makers and planners. Baltimore, Johns Hopkins UP 1978. 239 p.

8. WEDGEWORTH, Robert, Librarianship: 1984 and beyond. In: Baskin, J. ed., Alternative Futures. Proc. 20th Biennial Conference of the Library Association of Australia. Sidney 1979, pp 15-33.

9. OECD. Review of national scientific and technical information policy: Ireland. Paris, OECD 1972. 7 p. (DAS/STINFO/72.18)

10. PATHMANATHAN, Murugesu, International negotiation and the management of knowledge. Doc. No. 32 at OECD Meeting on the Knowledge Industry and the Process of Development, June 9-12, 1980. Paris, OECD Development Centre 1980, p 7.

11. NELSON, Bonnie R., The chimera of professionalism. Libr J 109,1980,17 pp 229-33.

12. MOLBECH, Christian, Brevveksling. I. Ved Morten Borup. Köbenhavn, Roskilde og Bager 1956, p XV.

13. EKEDAHL, Josef, Molbech den äldre och Sverige. Akad. avh. Lund, Gleerup 1906, p 8 note 3.

14. KITAGAWA, Tosio, Informatic analysis of scientific research.7th International CODATA Conference, Oct. 8-12, 1980 in Kyoto, Japan. In: CODATA Bul. 37, 1980, p 3.

15. HARDEN, Richard M., The process of development: Helping managers become information efficient. Doc. No. 1, OECD Meeting on the Knowledge Industry and the Process of Development, June 9-12, 1980. Paris, OECD Development Centre 1980, 32 p.

16. COLBY, William E., Modern intelligence - a contributor to development.- Doc. at OECD Meeting on the Knowledge Industry and the Process of Development, June 9-12, 1980. Paris, OECD Development Centre 1980. 14 p.

17. DROR, Yehezkel, Public policymaking reexamined. San Francisco, Chandler 1973. 370 p.
--------- Comprehensive strategic intelligence for rulers. Doc. No. 3, OECD Meeting on the Knowledge Industry and the Process of Development, June 9-12, 1980. Paris, OECD Development Centre 1980. 24 p.

18. PEARCE, Frank, Management intelligence and perspectives for the 1980's. Doc. No. 25. OECD Meeting on the Knowledge Industry and the Process of Development, June 9-12, 1980. Paris, OECD Development Centre 1980. 36 p.

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19. DEDIJER, Steven, The IQ of the underdeveloped countries and the Jones Intelligence doctrine. Technology in Society, July 1979 pp 239-51.

20. SARDAR, Ziauddin, Between GIN and TWIN. Meeting the information needs of the Third World. Aslib Proc. 33, 1981, 2 pp 53-61.

21. ZOZAYA, Dionyso F., Red interna de información técnica del Ministerio de Energía y Minas. Proc. 10° Congreso Venezolano de Ingeniera, Arquitectura y Profesiones Afines, Puerto Ordaz 1979. 35 p.

22. TELL, Björn V., The awakening information needs of the developing countries. J Information Science-Principles & Practice 1, 1980,5 pp 285-9.

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COMMUNICATION WITH THE THIRD WORLD COUNTRIES

J.S. Musisi

Head of Library Services, Kenya Science Teachers College,
Nairobi, Kenya

1. What is communication?

Communication is that action by which information, ideas or feelings are transmitted or imparted from one person or group of persons to another. The word: "Communication" comes from the Latin: "Communicate" which means to "share or make common". For communication to take place, it requires a means of giving it to someone else. The chief means of communication are the brain and the sense and it is as a result of communication that people are able to share their knowledge, add to it, and pass it to the next generation. There would be no knowledge, however, if what individuals know was never recorded, either by memory, audio visual recording or even printing to form information. Without this information being communicated, people would have not increased their knowledge. Communication is therefore very important in the advancement of human knowledge.

2. Development of societal communication

A situation where a group of people lack a common language, the only means by which they communicate knowledge and information is through signs and gestures. Otherwise, a common spoken language is the only effective means of communication. A common spoken language having been established therefore, a cycle of ideas and actions has thus been harnessed. Authors and others related to this, have put knowledge and information in recorded forms making it the only dimension through which endless experiments and investigations have been achieved. The new generations read and or get to know through one or the other means of recording of information all the past experiences, experiments and investigations and in turn, improve on them as well as investing new ones. Thus, a lot of effort, time and money is saved in the process. Consequently, greater strides are made in the field of knowledge and information.

The ancient man wrote on clay tablets, papyrus and palm leaves. This was the first time that knowledge was recorded using the alphabet. In history, therefore, man was enabled to preserve his thoughts and knowledge. Preservation of the written records of the past and present knowledge has always been vital to the human society and his civilization. As a result, it has become increasingly so as science, philosophy, literature, the arts and the social sciences explore new frontiers. Without this preservation, man's knowledge and thoughts would be reduced to only a small portion of the total which he could learn from people within the range of his own hearing. In this way, man's culture as well as civilization would soon vanish. This means that the book and its associates - the non-book materials - whether made of clay, papyrus, parchment, paper or audio visual resources, has been the only effective means by which man's knowledge and ideas have been recorded, kept alive, kindling new ideas even in periods of

apparent cultural stagnation. Recorded language, whether in books or audio visuals, is even more important because it permitted knowledge and experiences, both real and imaginary to be communicated without the physical presence of their producers, e.g. authors, and to be passed on to later generations. More important, however, is that aspect of preservation of these documented knowledge which has made it possible for the younger generation to read, hear and know not only what transpired in the past without their own people, but also in other parts of the world. This point brings the creation of libraries as the repositories of these documents and the librarian as the keeper and communicator of the information.

3. Transport communication

Communication of information from one generation to the other as well as from one part of the world to the other would never be possible without the various means of transport communication systems. Nowadays people read books, view films and use several other carriers of information from the east and west, north and south without ever seeing or knowing the originator of the information, e.g. the author.

Early man was a wanderer - of necessity rather than choice. Food was scarce and hard to come by. Enemies, on the other hand, were very very many. From the earliest times, however, the conditions which man lives, have been powerfully influenced by the ease and speed with which he has been able to move himself and his materials from point to point on the earth's surface. By harnessing nature directly and indirectly, man has been able to explore and exploit earth's resources. The chief landmarks in the history of transportation are: the engines, the electric motor, and the great technological breakthrough of flight - promise as the 21st century approaches, to be capped by the rocket engine, which frees man from dependence on earth's atmosphere and permits him to visualize travelling to other planets."(1).

During the Bronxe Age, for example, the development of Agriculture and trade facilitated by the domestication of the horse, marked the beginning of civilization. On the other hand. railroad industry looks back over a proud history in that it was a vital element in the industrial Revolution in Britain. Thus, railroad helped make that country an industrial power. They also played similar roles in France and Germany and went on to do much the same in Russia and Japan. Railroads almost literally built the United States and Canada and they remain the economic backbone of most of the major world powers. The history of East Africa, for example, is not an exception in this as it stems from the history of the Uganda Railway, later to be known as the East African Railway. In most third world countries, railworad is the dominant all-purpose land carrier of both freight and passenger, while highway and air services have almost completely taken over the transportation of passenger in industrialized nations. In terms of communication of knowledge and information, therefore, means of transport have a vital role to play in that there must be established an effective and efficient air, land and water transport systems and services both nationally and internationally in order to create and maintain an effective communication of information in a country.

4. What are the functions of communication

As already stated above, there would be no knowledge if what individuals knew was never recorded to form information. It would also be

impossible, if not difficult for people to increase their knowledge if the knowledge they knew was not communicated. Communication is thus the means by which knowledge is circulated. The purpose of communication, is therefore, to inform, convince, reinforce, rebuke, request, seek action, counsel and or advise. It is estimated that communication forms roughly 80% of the activities of any organization. This proves how important communication is in life.

Within the framework of the new international economic order, Unesco's architects of NATIS interpreted the aspect of problems to mean: "a systematic provision (communication) of information to every individual. They subsequently stated that a major element in the improvement of the quality of life must be the amount of knowledge that each individual can acquire. This means that information is an essential basis for this improvement and a vital instrument in the progress of civilization and society. In this context, they contended that each individual should have access to the information services that would help to achieve a society which citizens, individually and collectively, can cope with the problems of everyday life. It can also assist in the improvement of human relationships in their own communities and between peoples of different cultures and traditions. Consequently, this would ultimately, contribute to better understanding and world cooperation." (2).

What this means is that a country where communication of information is made easy and free that country is likely to improve its capability by taking advantage of existing knowledge and know-how achieved elsewhere. In the light of the available information being communicated, that country is also likely to rationalize and systemize its research and development efforts. Thus, it will be able to solve some of its problems by applying new alternatives and approches to the solutions of technical problems, and options for minimizing future ones. As a result of this, there would be improved effectiveness and efficiency of technical activities in the production and service sectors. Above all, there would be better decision-making in all sectors and at all levels of responsibility. One economist, D. Lamberton has emphasised this point by saying that: "in a world.....where the firm is obliged to make unique and crucial decisions to optimize and to innovate, the making of such decisions put a premium on information; its acquisition, storage and utilization become a major business activity" (3).

The functions of communication of information therefore are to:-

4.1. "stimulate thought and action by injection of, and interaction with, other people's ideas, knowledge, experience, achievements as well as failures.

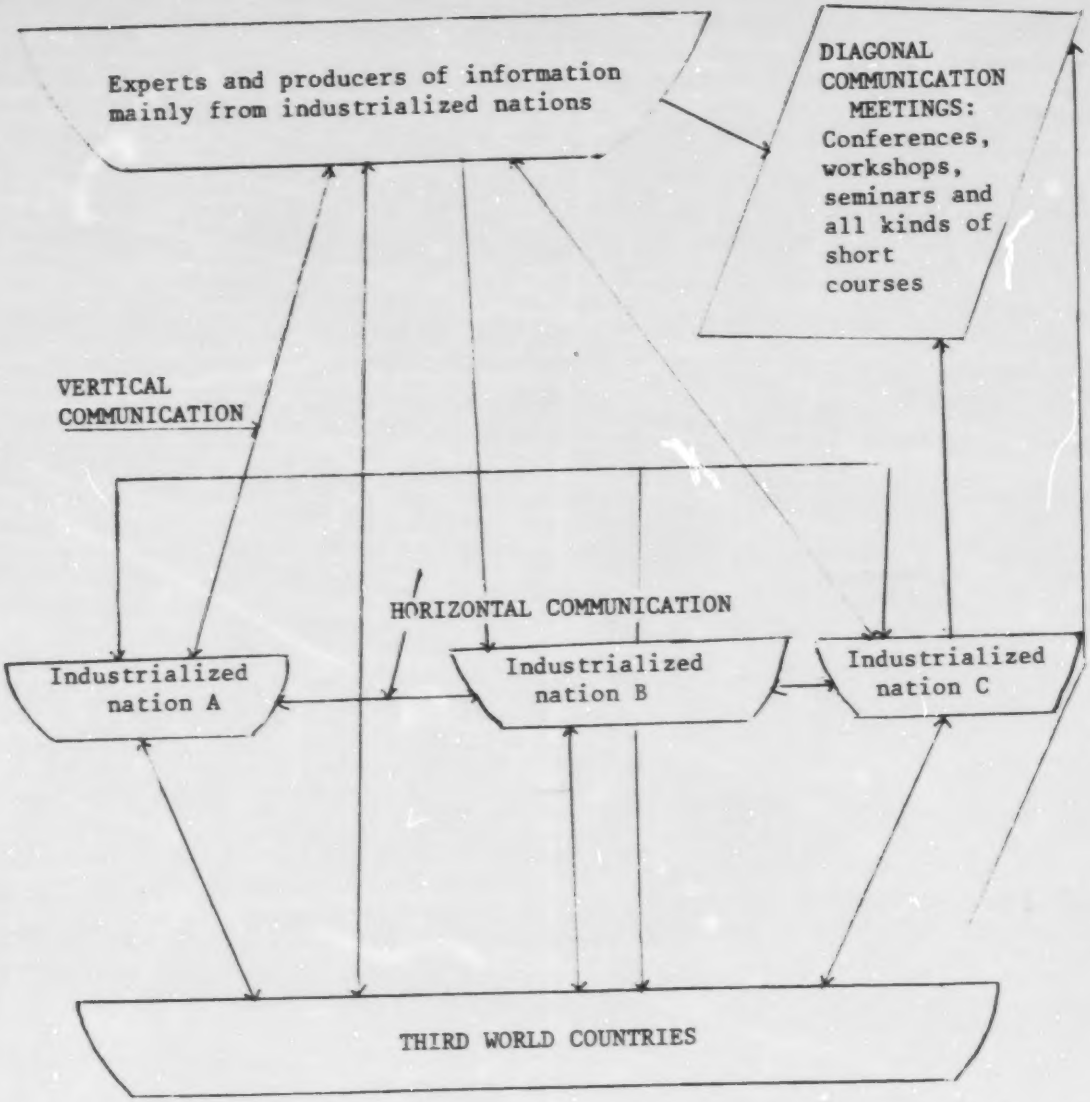
4.2 promote continuous awareness of what others are doing so that individual workers or groups may know of developments in their own special fields, and in wider fields such as discipline, or technology;

4.3 diminish the probability of unwitting duplication of work and to save time and effort;

4.4 provide introductory and background information for work in unfamiliar fields;

4.5 provide specific information and date needed for work in hand;

4.6. meet specific requirements" (4)


Experts and producers of information mainly from industrialized nations
DIAGONAL COMMUNICATION MEETINGS: Conferences, workshops, seminars and all kinds of short courses
VERTICAL COMMUNICATION
HORIZONTAL COMMUNICATION
Industrialized nation A
Industrialized nation B
Industrialized nation C
THIRD WORLD COUNTRIES

5. Barriers in communication

Most third world countries are bedevilled with more problems than they have solutions to them. This makes it extremely difficult for them to achieve smooth flow of communication of information amongst themselves as well as with the industrialized countries. People are able "to minimize wastage or resources through unintended and unnecessary reinvention, rediscovery, redevelopment as well as the making of unfruitful decision when they have easy access to precise and reliable information." (5) This information needs to be given to the right person, at the right time in a form most conveniently usable by that person.

Any barrier to access of information therefore will prevent proper communication and information flow, causing problems for users.

5.1 Lack of ideas

Admittedly, finance limits development of any effective service. Hence, without finance, there can never be established sufficient and well built road, railways and airlines. It would equally be difficult to set up an efficient postal and telecommunication services which would facilitate telephone, postage, and satelite communication activities. Availability of funds therefore, makes it possible to use radio and television as a means of mass communication.

Money, however, is scarce in third world countries more than it is in industrialized nations. But what is even more lacking in third worlds countries is lack of innovation and ideas. Lack of finance therefore becomes a reflection on the inadequacy of the communication projection. This results in a number of library services in third world countries to be hampered by the ineffectiveness of the librarians in making sure that library services receive their proper share of the available finances. Priority for expenditure of funds in third world nations is placed on activities connected with: education, rural health, adult literacy, building roads, etc. Lack of funds for library development therefore takes into account not only how the librarians interpret the development plans and their implications to libraries, but also how the libraries draw up their own respective plans for consideration by their respective governments. Arising out of poor and inadequate development plans by librarians, it is usually a common song: that our government does not recognise library services when in fact it is the librarians who failed to make the necessary impact. What brings about this sad situation in most of the third world countries is that not only do some of these librarians receive inadequate and irrelevant training, but also lack of the necessary experience for the jobs they hold. Some of these people receive sudden and dangerous accelerated promotions to national leadership before their professional experience solidifies.

5.2. Lack of government recognition

A number of third world countries have dwarfed their systems of communication of information due to lack of direct support received from their respective national governments. Thus, libraries are given less priorities in the development plans. Closely related to this issue is the ignorance on the part of a number of government officials on the importance of information in the pattern of modern economic progress. As stated earlier, priorities of expenditure in most third world nations are placed on rural health, education, adult literacy etc., and these are dictated by a host of factors: political, social, and economic needs of the individual countries without realising that communication of information would enhance the achievement of the overall intended goal. A number of factors contribute to this ignorance on the part of government officials. Most civil servants are information illiterate, they never keep abreast of developments in a variety of areas within the government institutions. This fact has been identified by the then Kenya Minister for Finance and Economic Planning and now the Vice President, Mr. Mwai Kibaki when he pointed out that: "the greatest problem in public institutions is the fact that people who leave university and are employed by government or state cooperations and the private sector, make up their minds that they have had enough education.

You meet that same brilliant student five years later, and he has gone back to becoming quite illiterate to the science in which he got distinction as a graduate - a very serious handicap indicating apathy towards development." (6)

The result is that even in countries where libraries have been recognized and legislations passed, these civil servants have not given the necessary support to enable the translation of the wishes of the legislature with regard to the development of library services. Hence, a number of third world nations have not established national information services and systems. There are no regular budgeting for expenditure on communication of information and training of librarians and related personnel is done haphazardly. only when this or that need arises. This is not good enough!

5.3 Language problem

Although scientific information is universal, the vehicle of scientific and technical information is not universal. It is made up of different languages that are unevenly distributed throughout the world. Crucial to this point is also the number of vernacular languages spoken in individual third world nations.

When Unesco was reviewing problems of information at the national and international levels which is posed by the improvement of educational systems, it identified that this hinderance to the communication of information and knowledge in third world countries can be seen at least under three aspects: "at the national level, publications and other materials are received in languages which are little known. At best, they are used by a very limited group of people with the knowledge of the language concerned; but because of lack of abstracting and translating services, this information is not widely circulated and does not reach the people for whom it would be most useful. Reciprocally, there may be presented in an internationally used language, so that when material in this particular language is sent abroad it meets the situation just described. At the international level, organisations produce publications in a limited number of language, usually in English and French, less in Spanish and very little in other languages. This, too, limits the circulation of international information."(7)

5.4 Currency exchange and import controls

Most of the library resources used in third world countries are manufactured and or published abroad in industrialized countries. The acquisition of these resources is usually hampered by: currency exchange, import license controls, mailing tariffs (postal rates) and communication rates related to distance" (8) In some of the third world countries, some of these difficulties are experienced in obtaining convertible currency. It is extremely difficult to obtain foreign currency clearance certificate from the Central Banks. As a result of this, many journals lapse in payment of subscriptions resulting in either discontinuation of the title, or loss of an issue in a set. Closely related to this is the time it takes for orders to be delivered.

In Kenya, for example, it takes between three to six months for books to be received from either U.K. or U.S.A. To a great extent, lack of government recognition plays a role in this. Those governments which place importance on information in the same way as on medicine and agricultural equipments, have more liberal control restrictions to information resources.

Thus, the distances involved and time it takes, some of these essential books and non-book materials either arrive torn, broken, or never arrive at all. Journals take at least one month to be received. Inseparable from currency exchange is financial restrains in general. This make it impossible to produce vehicles of communications such as setting up publishing firms, bookshops, manufacture of audio visuals etc. The result of all these is total lack of an established effective library and information system and service.

5.5. Censorship of literature

Censorship in its preventive and prohibitive forms is prevalent in most third world nations. One problem is that Censorship Boards in most of these countries are manned by people whose interest is to protect moral and political interests without much sympathy and regard for such restrictions on educational values of the documents in question. The other problem concerns government publications. The bulk of research in third world countries is carried out in government departments since they are the richer employers that engage the vast majority of highly skilled manpower. Although some of their research findings are printed and published by the government printers, the bulk of the documents are termed: 'confidential' and hence circulate to very restricted officers. Yet these documents contain information that is vital to scientific and technological development of a country. This censorship also affects documents produced by Unesco experts resulting in wastage of time and effort.

It should be appreciated, however, that all government/official publications reflect the life and history of a country's government, and they constitute primary resources of information and as such, they must be made available for use by people for whom they are intended. As for industrial and commercial firms in third world countries, most of their headquarters are in industrialized nations. Information relating to the work performed by these institutions is usually the preserve of the home country where the headquarters is.

This raises the question of patent which is closely related to this topic. Research scientists, inventors and entrepreneurs are discouraged from doing any research which would lead to national development in that an investor is not encouraged to register an original patent in his own country where he had made the invention. Such registrations are made in former colonial countries. This in effect means that licensing for production of what he invented is likely to go to manufacturers in those metropolitan countries. Otherwise the manufacturers in third world countries will find themselves paying high fees to industrialized nations to develop the invention into a manufactured product or social service. This circumstance terribly deprives third world nations of their initiative, and hence lack of motivation which result in lack of communication in scientific and technological knowledge.

All these lead to an important conclusion. By so arbitrarily censoring works of art, science and technology, communication of information is greatly hampered. The gap between the young and old generations is widened, vital research in government departments fail to reach their destinations as a result of exaggerated 'confidential' documents and hence, what information and knowledge is communicated to people in third world countries is limited.

5.6 Lack of reading as a habit

It should be an accepted fact that there is no point in saying that you know what you want if you don't know where and how to get it. This handicap can be corrected if the people concerned are not only literate but also read for pleasure. Unfortunately, however, third world countries are frantically struggling to eradicate illiteracy in their midst in order to mould their people into literate populations which can be used as infrastructures of their national development. What is even complex is that even for those people who can read and write in these nations, they do not read for lifelong education. The few who read, do so for examinations. We are reminded by Ochieng that "Kenya intellectuals read almost nothing after they have left school and instead spend most of their time quaffing or indulging in cheap gossip..... that our intellectuals find reading to be extremely painful that it strains their eyes, and it brings a headache." (9) This means that libraries in third world nations will flourish only when leisure time will be developed. Most people in third world nations are still struggling for their livelihood.

Education in many cases is based on examinations so that once an examination has been passed most people in these nations consider it as 'little David having conquered Goliath'. They therefore graduate, at whatever level, and wait for another 'philistine' to come (Bible). Unfortunately for them, this situation never occurs, and hence they relapse into illiteracy.

5.7 Lack of human and material resources

The world has been unable to exercise some bibliographic birth control. This situation has, in turn, created complexity, not only in the multiplicity of publications but also in numeracy of forms in which this ploriferation of information is recorded and published. Literature of most disciplines is continuously growing exponetially and the bibliographic apparatus designed to make these material accessible is correspondi ngly growing in complexity. The lending division of the British Library, for example, is reported by Maurice Line "to be receiving 10,000 inter-library loan requests a day and filing up to four miles of shelving every year with new books" (10). Equally complex is the form in which information is being recorded, which creates further problems in the form in retrieval services. The growth of data bases has been estimated by Martha Williams in her article of 1977 "to be from fewer than 20 in 1966 to over 300 in 1977." (11) This, in turn has created startling growth in on-line searches. What is worrying is that there is no guarantee that this pattern is ever going to change.

Most third world nations have extremely limited capabilities and resources, both human and financial to devote to the production and acquisition of information. On the one hand, most of these nations produce less than one percent of the world's scientific literature. On the other hand, the vast majority of them do not have a sufficient number of qualified personnel who can handle and keep abreast of developments in the communication of information. The complication of these handicaps is that most of the communication systems and services in third world nations are unable to develop and expand in response to the ever growing needs of users. This is so because most of these communication systems and services are stunted with meagre numbers of staff, limited library resources and poor library buildings.

Another problem is that a number of the third world nations have suffered from great brain drain. Agreat many intellectuals have been enticed from third world to industrialized nations. There are no direct telephone links between neighbouring third world countries. A telephone call from East to West Africa, for example, has to go through either London, Paris or Brussels, and there are only two days in a week when telephones are through between Nairobi and Cairo!

These facts are only relevant in demonstrating that a country's development depends on its application of knowledge and information rather than in the generation of new knowledge. Knowledge and information are readily available somewhere in the world, it must, however, be made accessible to all kinds of decision-makers, entreprenuers, scientists, engineers and technologists. Means of communication and transfer must be established. In fact, it is the gap of accessibility of information between third world and industrialized nations which must be bridged if economic progress is to be achieved.

5.8 Poorly managed book suppliers

Most book dealers in third world countries are in the hands of people who have no notion in publishing and bookselling. In addition, they are poorly managed as a result of poor staffing and financing. There are also no facilities for these people to get any training. Yet the 'book' has become the main tool of communicating education! Anyone with a printing plant will occasionally back a book and call himself a publisher. Similarly, a bookstore owner will finance a book and still call himself a publisher. On the other hand, some government institutions set up to publish educational materials only to call themselves publishers even though they are not commercially in their operation.

Closely connected with this problem is the fact that publishing industry in most third world nations is dominated by overseas firms. These cater mainly for the international market which include a very small elitist minority of nationals. These overseas firms have a negative attitude towards works of indegenous artists. As a result of this, there are no suitable books for children in nursery and primary schools as well as for the new literates in adult education. This results in libraries acquiring irrelevant, expensive and uninteresting books from overseas. In many cases, these books discourage reading for pleasure.

5.9 Lack of National Information Policies

It is sad to note that although majority of third world countries are member countries of Unesco and that they were represented at the 1974 Unesco conferences when NATIS was formed, plans for the implementation of NATIS have not been drawn. There is also no planning for information in the overall National Development Plans of these nations: Yet lack of knowledge and information can be a serious obstacle to the formulation and implementation of development plans and thus, it can adversely affect the rate of progress. This is particularly true when viewed from Thorkil Kristen reasoning when he describes lack of Knowledge in Low Income Countries (mainly third world nations) as a more serious problem than the lack of capital: "Knowledge has been the dynamic factor while capital the passive factor needed for the utilization of knowledge. Accumulation of capital is important, as it helps men to apply the increasing stock of knowledge but capital accumulation is not useful without knowledge. The poorer countries need more knowledge adapted to their situation even more than they need capital since, without adequate knowledge, they would not be able to utilize more capital. This is even important because the difference between these countries and the richer ones is greater regarding knowledge than regarding capital." (12)

5.10 Geographical factors

Most third world countries suffer from poor network of transport communication system. There are no national network of postal telecommunication services to enable people within a nation to communicate over telephones, postage of letters take much longer to be delivered than it takes for letter to be received from abroad. There is poor radio and television services and certain road and railway services close down due to lack of bridges during the rainy seasons and heavy sand during the dry seasons. Other nations are prevented by mountains. These factors hinder any development of national library services.

6. Solutions to communication of information

There is no clear-cut prescription to solutions on a number of the barries discussed in this paper. Some solutions will largely depend on the powers that are while others will remain perpetual. For example, the question of language is very thorny in a number of the third world nations where numerous vernacular languages are spoken. The question of evolving one national language is unheard of, yet English and French will never totally be spoken by every citizen for as long as education is not provided free by government.

Problems relating to lack of government recognition, currency restriction and censorship will also hamper communication of information in third world countries for along time, unless of course, there is going to be some kind of educational dictatorship! Solutions to some of these barriers will vary. Some will need short-term while others will need long-term planning and much will depend on whether technology from industrialized nations will be available to assist in alleviation of these barriers.

The order of these solutions is not in any way presented according to priority.

6.1. Personnel Training

Personnel in any organisation is the lifeblood of the activities that are carried out in that organization. They are hinge-pins between the producers and users of information, when thinking about libraries. Thus, they act as the pivot around which information and knowledge revolve. A sufficient number of qualified staff at all levels in any library, therefore, is a pre-requisite to an effective and satisfactory provision of communication of information. Thus, shortage of staff denies professional librarians the chance to perform professional duties Consequently, this leads to lack of motivation frustration and job dissatisfaction.

To arrest this handicap, there needs therefore to be ensured by national governments, that stable and well organised library training programmes are established. In addition to this industrialized countries should be requested to generously provide scholarships and other forms of assistance to enable successful candidates to obtain higher qualifications. Equally important is the provision of short courses and study tours and attachments. These enable younger librarians with little experience, but performing senior jobs to attend. This would assist to stimulate new approaches to their jobs and widen their horizons through the contacts made and ideas acquired during such short courses, study tours and attachments. Programmes like some of those at the Department of Library and Information studies, Loughborough University intended for third world nations are worth emulating.

6.2 Information services and systems

Within the framework of the new international economic order, third world countries will achieve a better world to live in, a world without poverty, ignorance and diseases, only if there is a systematic provision of information to enable these nations to eradicate illiteracy and thus create an informed citizenry. Consequently, the manufacture of goods would depend on knowledge being provided, acquired, promoted and applied. Information services form an integral part of this process if plans for economic development are to progress.

When NATIS was conceived, discussed and adopted, it was implied that: "the government should maximize the availability of all relevant information through documentation, library and archives. It is therefore necessary that governments should define the functions and objectives, importance and potential contribution of the information services in all fields of national planning and development: carry out surveys of existing services, and on the basis of the survey data obtained, forecast future needs and prepare long-term plans which should cover legislative and financial basis for the operation of all aspects of the structure of these services including manpower provision, technological components and cooperative arrangements." (13)

It is ironical that governments which are member states of Unesco and hence signatories to resolutions of GIP have not as yet attempted to implement these recommendations. If they had, then some of these barriers could have been solved. Maybe, Unesco should have a second look at its GIP in relation to the benefits to be gained by the masses of poor nations.

Industrialized nations could perhaps be requested to study the 'adoption method' of libraries in third world nations. Such an adoption of a library in a third world nation by a library in an industrialized nation could provide for direct link, exchange of materials ideas and experience between the two library systems, with a minimum of administrative work. Hence, librarians in the two countries concerned would develop a feeling of active involvement at all levels. They could also develop reciprocal exchange of personnel.

6.3 Library user education

Information has no value until it is used. In order to cope with the ever-increasing volume of knowledge and the complexity of retrieval systems, librarians will need to understand the pattern of communication and how to organize efficiently their methods of information retrieval. Libraries in third world nations will need to attend short courses on library user education in order to understand, not only the philosophy underlying the concepts, but also to learn how to run them. Industrialized nations will be requested to assist in this by providing human and financial resources. Some experts in this area will need to be sponsored from industrialized nations to run seminars and workshops in third world countries.

Arising out of the knowledge and experience acquired, librarians in third world nations will therefore organize and run library user education for users in their respective countries. "It has been found that although forming the bulk of the population and playing a most significant role in development, the illiterate members of the society have least access to information and knowledge. Non-formal education, the teaching methods, already referred to above, are mostly geared towards examinations but not preparing people for lifelong and continuing education. Besides, there is inadequate provision of library and information facilities, further hampering the process of skill-development for lifelong and continuing education. Most policy makers and other graduates of the formal education system have inadequate skills for seeking information and knowledge, mainly due to their educational background." " (14) Library user education courses will need to be organized and run by national librarians. Librarians from industrialized nations will be requested for assistance. Another practical method linked with this is for each country to declare a 'Library Week' during which time a focus attention should be placed on Library use

6.4 Library Associations

Librarians in third world countries should be encouraged and assisted to form national library associations. In Kenya, for example, there is the Kenya Library Association. There is also, in the region, the Standing Conference of Eastern, Central and Southern African Librarians (SCECSAL) which brings together twenty countries of the African sub-region.

The purpose for library associations is to unite and bring about professional links of librarians. To promote and support the development of libraries, create a platform and a forum for members to meet and discuss ideas and exchange experiences.

Library Associations will also politic in government corridors in order to educate and influence their respective government civil servants so that they may appreciate and recognize the importance of information as a tool for socio-economic, political and technological development. Such recognition when achieved, national information policies can be legislated as a means for establishing systematic national information systems and services.

Through library associations, librarians in third world countries will find it possible to affiliate themselves with international organizations like: IFLA, FID, ICA, COMLA, etc. Thus, they will widen their knowledge through participation in forums of these bodies. International organizations and industrialized countries should be requested to offer definite and substantial assistance through aid, conferences, exchange of personnel and consultancies, publications in order to enable the realization of short and long-term plans of third world nations.

7. Summary and conclusion

Communication is a basic human activity. If it suddenly disappeared then life would crumble. There are several ways in which communication is transmitted: verbal and non-verbal. Important of these methods include: letters, books and non-book materials: (signs, radio, televison, films, etc.) and transportation. By use of these various types of communication systems and services, the world has become very small. It takes much shorter time to share information with people in far parts of the world. If, however, a misunderstanding arises in the communication process, serious and disastrous results can be and are usually encountered.

Communication and transportation are so closely linked that they are difficult to separate. Before information is delivered through any of the carriers like letters, books, audio visuals, etc., to offices and homes, for example, they must be transported from one place to another. Air, rail, road and sea transport services carry mail from post offices to homes. Quicker still, telephones, radio, television, etc., communication are even faster. Information and knowledge could thus be almost useless if it were not transported from one place to another. Transportation, therefore, makes communication possible.

In the final analysis, it is important to have well trained manpower, efficient transport systems, national and international cooperation in order to achieve satisfactory communication of information. It is also essential to have sufficient funds. Communication with third world nations will therefore be achieved if and when industrialized nations come up with generous assistance in all forms.

REFERENCES

1. SCHRAM, Wilbur. Communication. In The World book encyclopaedia ci - cz Vol. 4 Field Enterprises Educational Corporation, Chicago. P.711

2. ZAHER, C.R. Unesco and National Library Planning. Chapter III in National and International Library Planning. Key Paper presented at the 40th Session of the IFLA General Council, Washington, D.C. 1974. IFLA publication 4th edited by Robert Vesper and Leone I Newkirk Munchen, 1976. P. 15

3. ATHERTON, Pauline. Handbook of information systems and services. Unesco, Paris 1977. P.10.

4. Ibid. P. 5-6

5. Ibid. P. 11

6. ENID Burke, Ed. In search of a system for dissemination of research findings and technology in Kenya, IDS Occasional paper No. 7, 1973. P.147

7. UNESCO. The problem of information at the national and international levels which is posed by the improvement of educational systems. Unesco bulletin for libraries xxxii, (4) July-August, 1978. P. 235

8. ATHERTON, Pauline. op cit. P. 11

9. OCHIENG' William. Intellectuals in Kenya and the search for knowledge. Sunday Nation. September, 17th, 1978. P.13

10. LINE, Maurice. The prospect before us. The School Librarian 24(1), 1976. P.5

11. WILLIAMS, Martha E. A history of developments and trends from 1966 through 1975. Journal of the American Society of Information Science. Vol. 28, March, 1977. P.72

12. KRISTENSEN, Thorkil. Development in rich and poor countries, a general theory with statistical analysis. New York; Praeger, 1974. P.8

13. UNESCO. Intergovernmental conference on the Planning of National Documentation. Library and Archives Infrastructure. Paris 23-27, September, 1974. Final Report, Paris Unesco, 1975. P.24

14. MUSISI, J.S. Educating Library Users in study skills and research methods in Kenya: A development Plan. A dissertation submitted in partial fulfilment of the requirement of the award of Master of Library Studies Degree of the Loughborough University of Technology. July, 1980. p.v.

LIBRARIES AND INFORMATION IN DEVELOPING COUNTRIES

P. Havard-Williams

Professor and Head of the Department of Library and Information Studies
Loughborough University

To talk about information work and libraries in developing countries is perhaps presumptious. Conditions are so different in different countries of the world. One talks of 'Africa', but it is difficult to generalise - is one thinking of West Africa or East Africa? Even within regions, there are considerable differences: compare Francophone and Anglophone West Africa, for instance. Even within countries, of course there are differences: in Nigeria, there are nineteen states, created because of local distinctions and differences. Division by religion is another factor but then a religion can be different in different ways: Christianity differs from place to place, as does Mohammedism or Buddhism.

Yet there are certain general characteristics. If one looks at United Nations publications like the Statistical Yearbook and the Demographic Yearbook there are certain generalisations one can make. A low Gross National Product, limited educational and training facilities, high illiteracy, limited communication facilities and technology generally, though of course still with considerable variation.

There are about 100 developing or transitional countries. In describing them perhaps one should first deal with the semantics of nomenclature. Countries in this category started with the epithet 'backward'; this in due course became 'underdeveloped', 'underdeveloped' was easily changed to 'developing' and was accompanied by 'emergent'. Currently, 'emerging', 'transitional' 'developing' and 'the Third World' are all in use, with one or other term favoured by different investigators on various ideaological (though, in my opinion, not very significant) grounds.

There are twenty-four countries distributed over Latin America (where many of the advanced developing countries or ADC's are found) ranging from Brazil

and Argentina to Ecuador and Uruguay. North Africa and the Middle East account for another nine countries ranging from Algeria to Afghanistan, almost all of them Muslim in character (not of course Israel or Malta). In the Sub-Saharan region of Africa, there are thirty-three countries from Chad in the north to Botswana and Lesotho in the South, including English, French and Portuguese speaking countries in varying states of development. Lastly, in Asia there are another fourteen countries ranging from mainland China to the Maldive Islands, from the organised state of Singapore to the catastrophes of Indo China (itself rather an old fashioned name).

If we start from the worst situation, we find no public library, poor quality university libraries hardly needed because teaching at university level, as at schools, is by repetition, and the regurgitation of lecture-notes. Special libraries are likely to be better, though limited in scope, and out-of-touch with other special libraries both inside and outside the country. The staff, though may be qualified, will be demoralised and struggling to maintain a service, or alternatively will have given up the struggle. Services such as water, electricity, telephones, will be erratic, and roads sometimes impassable. Such however is the human spirit that communication somehow gets through - though slowly. A telegram or telex will often take as long time as a letter. It is important to bear in mind that the information or library service takes on the character of the country and can be, in a general sense, no better and no worse than other activities within the country. On the other hand, there are countries where certainly the information services are comparable with services in industrialised countries. In Korea, for instance, the services offered by library and information services at the Korean Institute of Science and Technology are of a high level. They have computerised services, printed bulletins and a library stock of a very good standard. And one must pay tribute to the work of the former director of KORSTIC (Mr. Kim) as well as the librarian of KIST (Mr. Park Ke Hong). Indeed all the government sponsored research institutes both in Seoul and elsewhere in Korea are trying to build up information services and libraries, which would be acceptable to any professional, whatever their origin. Brazil, too, has significant special libraries which contribute to the development of scientific work in the institutes and foundations of which they are part. These two brief descriptions represent one extreme - the other is left to the imagination!

On what does development depend? In my view it depends on one or two strong personalities of ability, who are drawn into library and information work

often by accident, and who are able to achieve some influence outside their institution either through the civil service, or through politics, or through hereditary position, or through their scientific or scholarly standing - or through a combination of these. Activity in the international field helps but it is not anything like as important as the factors mentioned above. Indeed, it is quite often true that a reputation internationally doesnot correspond with a national reputation, and it can happen that people successful internationally are relatively unknown in their own country.

Over the past ten to fifteen years we have seen the development of a small profession, and a relatively minor activity, in a variety of developing countries. Library and information work has developed from isolated activities, such as John Harris's work in West Africa at Ibadan in the twenty years from 1947, the beginnings of the various university and college libraries in the Commonwealth countries, together with the establishment of public library systems (now relatively well developed, in Jamaica and Nigeria, for example). Within the last ten years, the activities in various parts of the world have become more coordinated thanks partly to the efforts of Unesco over the years through the work of the division of documentation, libraries and archives, partly to the influence and support of bodies such as the British Council, also to the Russian initiative of calling together a seminar for developing country problems in the field in 1970 through the agency of the International Federation of Library Associations, which itself in alternation with the Federation Internationale de Documentation has organised regular seminars for librarians and information workers in developing countries, and has tried to organise a continuing programme through its division for developing countries. A further major influence on developing countries was Unesco's organisation of regional conferences in South America, Asia and the Arab countries and the Inter-Governmental Conference on National Information Systems in Paris in 1974: this gave a considerable impetus to activity in developing countries all over the world, and has had its effect on Unesco's own activity by bringing into harmony the Unisist programme (a world scheme for information in science and technology) and the 'Natis' programme (the promotion of national information systems).

What most people working in developing countries are concerned about, in making any kind of structure work, is the infra-structure. It is all very well planning at the centre - of the country, of the region, at Unesco or

Unido or FAO - but how are you going to get the job actually done on the ground? In Commonwealth countries in particular, there has been the initial expatriate, the training of local professionals in Britain, Canada, Australia or New Zealand, and the gradual increase of resources through local initiative. There have been British government grants, through agencies like the British Council and the Interuniversity Council for Higher Education Overseas. The other major national influence is American, which is not so successfully transplanted, largely because of the enormous difference in scale of resources. The scale of the United States in terms of geographical size too has made it sometimes difficult to search out the best qualified and most appropriate 'expert' for work in other countries. And there have been the contributions from the Scandinavian countries, France, Germany and Switzerland, among others.

But why should we be concerned about the build up of a library and information infra-structure? Any infra-structure of this kind is not quickly achieved. It has taken a hundred years to get to the point where the profession is taken really seriously by the government, to the point where its professional advice is actively and regularly sought in the formulation of national policy. It has taken roughly one hundred years, too, for librarians in universities and other institutions of higher education to win acceptance as equivalent members of the teaching staff - a process not completed in the schools. And yet it is important that developing countries should short-circuit these long periods of time, because library provision is a relatively economical service in any country, capitalising on the benefits of a much more expensive educational system and research programme. It costs 3%-5% of the cost - of both together, or even of the educational programme alone. Think of the principle of the supermarket - this is based, depending on your point of view, on self-help, or on making the customer do as much of the work as possible. A library is a kind of educational supermarket in which the customers help themselves with a minimum of instruction. Libraries, with an active service, well organised for the exploitation of stock and oriented towards the service of users can help towards the quicker spread of education and training for the population as a whole, as well as helping to stimulate the thought of those who will be the leaders of the nation. The encouragement of professionalism among librarians will go towards the establishment of a service which allows for individual reading and individual development which can counter-balance the all too ready imposition of ideas in the teaching in the classroom. The positive development of stock and services will give an added dimension to educational and other programmes.

Why then do libraries not flourish in the developing countries. Not least because they are not spectacular: libraries, information services, and archive depositories for their success depend on a series of small operations meticulously carried out and depend on attention to detail and accuracy. This does not attract the most able, except at a relatively sophisticated level. A second-rate personnel means that the case made for library and information provision is second-rate, and with so many needs to consider in a developing society, a service which is not forcefully presented goes downhill rather than develops. The able members of the service especially those who are trained overseas not infrequently have used and still use, the training as a stepping-stone to some other more lucrative post in the country, or, less often, a more lucrative post in another country, or an international organisation. Of course the whole tradition of many societies in developing countries [illegible] against the grain of book-reading. The oral traditions of Africa, of the Arab countries (in spite of their devotion to the Koran) the importance of 'tradition' (in itself) in the Far East, the desire of the Brazilian above all to get to the beach, all these militate against the development of the public library or the school library. Moreover, the whole tradition of teaching tends, in different ways and for different reasons, to make libraries superfluous because lecture notes are dictated, and are expected to reappear in more or less the same form in examinations. (In New Zealand, in the last century, professors were asked why did they need books? Their services had been purchased because they were supposed to know everything in their subject.) Students whose living conditions do not usually allow for conditions of study do not therefore need to use libraries as collections, but as study rooms. Even less likely to be encouraged to use libraries are students who have graduated because they are concerned primarily to get a degree, and once the degree is achieved any motivation for further study is grossly diminished. Hence, one finds that university or college collections are limited in scope, poor in quality and unlikely to encourage students to further study. The impetus of initial standards, concepts of education, government attitudes to higher education and external aid all seem to have a bearing on the quality of collections. Hence one finds in countries of the Commonwealth that standards in higher education are generally higher than elsewhere because standards were set earlier on, higher education was considered prestigious by the indigenous governments, and aid has continued over a reasonable period. One has only to compare the collections of a library like that of Ibadan or Lagos University to see what a difference there is between them and, those in the Far East. Many of the libraries are filled with fifth-rate American college texts.

Indeed, it is true to say that in all developing countries there is in broad outline a hierarchy of library provision. At a minimum (or nothing at all) school libraries, then not far above (with rare exceptions) public libraries, then university libraries, and lastly, usually at a level of provision reasonably comparable with that in industrialised countries, there are special or industrial libraries. Because of economical considerations, these libraries are often indistinguishable from their corresponding numbers in other more industrially advanced countries. Even in Ghana, suffering as a whole for a number of years now from book starvation, the library of the Council for Scientific and Industrial Research is recognisable as the library of a research institute, and the Council's information services have equally been developed over the past five or ten years to a point where they would be reasonably satisfactory to the ordinary working scientist anywhere.

So far we have tried to set the scene as it is now. Very inadequately one has tried to indicate a general level of provision with some examples but it is difficult to give a world picture. There are of course regional - continental - differences. In Anglophone Africa, libraries are relatively well developed; in Francophone Africa, there is very little. In South America, the library profession tends to be divorced from the information workers; librarians are very poorly paid and frequently hold two jobs to make ends meet. In the Arab countries, public libraries are almost non-existent, and so is any kind of bibliographical organisation, though there is a concern for scientific documentation because it is necessary for industrial development. China has, of course, been an unknown quantity for many years, but as in the case of other activities, progress is being made in developing relations with countries outside China, and we have had a Chinese delegation to visit us, and enquiries about receiving Chinese students in our department.

If there is a variety of provision of library and information services, there is equally a variety of education and training programmes. There are, however, certain general patterns. There is a variety, equally, among industrialised countries. In Britain, there is a masters degree, or a post-graduate diploma, after an initial degree in another subject, a bachelor's degree in library studies, or a two-year professional diploma (now fading away). In France, there is a similar situation, but without the bachelor's (or licence) degree. In Scandinavian countries, and in Germany, library and information education is on the whole provided outside universities. In the USA, there is the master's degree after a liberal arts

BA. In Latin America, the usual pattern is that of a bachelor's degree, though there is a postgraduate programme in Medellin, one or two postgraduate programmes in Mexico, and several are now established in Brazil, (where I had a hand in planning them in 1975). In Korea and in the Middle East there is a somewhat similar pattern. In African Anglophone countries, the pattern varies, but it more or less follows British practice. In Francophone Africa, there is a regional school for archive, library and information studies at Dakar this is at the level of the British two-year diploma, and schools for information studies ('documentation') in Tunisia and Morocco. In India there are numerous library schools offering bachelor's and masters' degrees in library science. In general, while there are of course exceptions, standards are more likely to be maintained in courses of postgraduate studies.

This gives, it is to be hoped, an adequate background for some conception of the status quo. In what state is the status quo to face the documentary information and communication problems of the '80's? The gap between reality and even practical ideal is wide, and as in other fields is probably growing wider, for reasons both similar and dissimilar from those in other fields of activity. Fundamentally, of course, there is relative poverty. But the difficulties widen particularly in the information field because of the considerable development of information technology. The difficulty is that not only the hardware, but the software and the overall conception of information services has multiplied and developed over the past decade. Moreover, the central importance of information is being recognised on a global scale. Machlup has estimated that up to 40% of the United States' GNP is being spent on information, and other countries, such as Japan, are foreseeing large expenditure on the development of information programmes. The Advisory Committee on the Application of Science and Technology to Development stated ten years ago-

> The Second United Nations Development Decade should ... provide for a systematic and adequately supported effort to improve the facilities and arrangements for the transfer of existing knowledge and technology from developed countries to less developed ones. Developing countries require scientific and technical information systems of their own, suited to the type, capacities and location of the producers and users of such information, and giving emphasis to the type of knowledge most needed for economic and social development. Such internal systems must effectively be connected with the information network of highly developed countries.[1]

The preoccupations of the last ten years, which will influence developments in the next ten years, are represented in fact by the Unisist programme of Unesco, for which the initial conference was held in 1971, and the Natis programme for which the principal conference was held in 1974. To some degree both were consolidated by a further Unisist conference held in 1979. The Unisist programme is concerned with a worldwide information service for science and technology. Inspired mainly through the International Council of Scientific Unions, the programme has been focused on the organisation and availability of information for scientists, the compatability of systems, both in terms of computer hardware and software, and in bibliographical terms, e.g. the problems of the standardisation of references patent formats, etc. Unisist is a world system primarily devoted to science or technology and largely, though not exclusively, devoted to material at a relatively advanced level. For reasons both of subject matter and of organisation the Unisist programme shades off to the Natis programme. This is concerned with the development of national information systems, and with the whole field of knowledge. 'Information' in this context covers principally documentary information to be found in information centres, libraries, and archive depositories. Included is not only information for the traditional humanities subjects, the social sciences, but also the provision for instance of community information, information for government and administration, and information from archive and modern record collections. For reasons not hard to fathom, Unisist has been seen as a programme for the developed countries, where world organisation or regional organisation can be based on already strong national services. Natis has been seen as a programme for developing countries since it is seen as a 'grass-roots' programme which makes sense in the context of separate national development of countries often widely separated in the stages of 'advancement' in which they find themselves. The formulation of the General Information Programme which brings together the Unisist and Natis programme is a real step forward, provided that adequate funding is allowed for developments over a broad front.

One of the difficulties of present work in this field is that it is difficult to see it whole. There is no doubt that different levels of development call for very different information systems. Political differences, too, have a major bearing on both organisation and technical developments. In the Communist countries, it is relatively easy to have a central policy, though not always so easy to have a uniform practice, because of the difficulties of professional communication. Indeed, there is an inherent difficulty of talking about 'systems' of information, because no country has a 'system' in the technical sense.[2]

What then are the professionals in the field looking for? In the first instance they are looking to global development of information systems. These now exist at the international level through bodies like the Lockheed Corporation, Systems Development Industries, Euronet, and other electronic networks which have available among them well over 200 data bases which can be accessed in one way or another all over the world. There is of course the problem of compatability both between hardware and software, but whatever the difficulties created by the manufacturers many, probably a majority, may be even most, scientists (especially) and technologists have access to modern information systems if they need them. The information provided so far is mostly to bibliographical references, or sometimes abstracts are given. There is little information of a primary character. To make full use of a sophisticated system there is a corollary, vis. one must also have access to the references, i.e. the text, which you have culled from your consultation with an on-line system. A document delivery service is a complementary and essential service in any modern national information system. In this connection, the British Library Lending Division makes a significant contribution to the availability internationally of documentary materials.

It was to look at information provision in advanced developing countries, that Professor Choi Sung Jin of Sung Kyun Kwan University, Seoul and a PhD student in the department, undertook his investigation in 1978. One of the primary problems is the problem of acquiring information in the first place. One of Professor Choi's contributions was to acquire a great deal of data about the organisation of information upon which he could base a thorough-going study for fifteen of the developing countries. Benzies Boadi currently working on a PhD on similar problems in Anglophone West Africa, will shortly be able to provide a directory of library and information resources for the region.

What is indicated in Professor Choi's dissertation is that in all the countries [3] there are governmental organisations for some part of the library and information services, which are usually in the science sector for information, and in education and/or culture for public libraries. In many countries, there appears to be no specific government body for the organisation of information services, while almost all the library organisation was undertaken by ministries of education. There are, on the other hand, national coordinating committees for information, (except Hong Kong and Malta) and these are composed of a variety of members from government, higher education, research and development institutes, libraries, industrial, and publishing

organisations. The committees' membership are not always absolutely defined, members tend to be appointed on merit, while a balanced sectoral representation was usually ensured. These bodies are responsible for the following functions - development of national information networks (10), coordination of their performance (10), national focus for international cooperation (8), long-range planning (7), development of national information policies (7), organisation of specialist training (5), promotion of research and development in information work (5), operational involvement in information services (5), organising user training (4), assisting establishment of new services (3), promotion of standardisation (one only). Broadly it is possible to distinguish between three types of organisation (a) those with a broad mandate, including policy, advisory work, planning and operational activities; (b) as above, but without concern for day-to-day operational activities; (c) advisory bodies. Of these, (b) appears to be the most satisfactory.

Information centres and services, the operational units, are found in almost all the countries investigated, the evolution appears to be from a general to specialised information centres in any service; translation services, and local information units are all to be found in the great majority of these countries. Where there are general information centres these are usually attached to major research organisations or university faculties. Of the specialised information centres, it was surprising perhaps to find the distribution as follows:

natural sciences	found in	8 countries	(57%)
technology	found in	8 countries	(57%)
agriculture	found in	7 countries	(47%)
social sciences	found in	7 countries	(47%)

Translation services are essential, especially if the language of the country is not one of the world languages. Yet the services are rudimentary, and lack the commissioning function fundamental to any ad hoc translating service. In only two countries are there indexes of translators. Translations are accessible only to limited groups, e.g. researchers and in science and technology.

Dr. Choi also analysed the number of researchers in the various fields

Total researchers in engineering	80%	25%
agriculture		25%
natural sciences		16%
medicine		14%
social sciences and humanities		20%
Total		100%

Distribution of researchers in each sector:

Production	40%
Higher Education	30%
General service	30%
	100%

Data on information institutions indicate that most countries have national information institutions, i.e. national libraries (11), information centres (11), or archives (10) - only one country (Hong Kong) has not one of the three. Yugoslavia has a national information centre but six national libraries (one each in each of the Republics). In just over half the countries surveyed, the three institutions are independent of each other. All the national libraries have a general collection acquired by national legal deposit, most have exchange programmes, and give assistance to other libraries. A large number (80%) publish national bibliographies and operate a national bibliographical centre. The planned acquisition of foreign material is however a low priority.

National archive depositories have the task of acquiring, organising and making available archival and other manuscript materials to users. Ten countries have national archives, but the comprehensiveness of the collection, their organisation and therefore the availability of documents to users is on the whole limited. Kenya, Korea, among others, have more adequate facilities than others.

National Information Centres are concerned with monitoring domestic research and development results, providing reprographic services, processing world, information material, publication of indexes, referral services, translation services, literature searches, and cooperation. The mechanisation of information work is still in its infancy but a basic level is likely to be

attained in many of these countries through the introduction of modern computerised methods. We are far away from the global use of information services.

Professor Choi has looked at levels of cooperative development and proposed five levels -

1. one large information centre, working with workers and libraries nationally
2. a large national centre, with uncoordinated specialised centres
3. local cooperation, without a national commitment
4. closely coordinated network to collect and disseminate information on a national basis
5. the coordination of national networks, to maintain close links with similar networks in other countries.

What are the principal difficulties in the way of development of information services? His enquiry elicited the following:

1. Shortage of qualified staff;
2. Lack of a national policy;
3. Insufficient funding;
4. Lack of coordination
5. Lack of user education.

In many countries, basic problems have to be solved to achieve a reasonable quality of life for the majority of the population. What priority should one give to education, information and libraries? Realistically, one has to agree that drains come before books, that industrial development is essential to greater prosperity. On the other hand, if modern technologies are to be developed one must have an educated population. If education is to be exploited economically, then information and libraries are essential. But at what level? Could one arrive at a percentage of the GNP? It would be difficult to arrive at a cost-benefit analysis, for how do you assess the benefit or even the cost of a child reading Alice in Wonderland, The Hobbit or Enid Blyton? - or a third year undergraduate reading an advanced text as against a professor reading a journal article? All attempts to do this appear to me to have failed, and this is not for want of trying for the members of the management unit at Loughborough (the Centre for Library and Information Management) have been discussing and investigating these problems for some

years without making too much progress. Indeed, the further one gets from provision of libraries for industry, for government, for (higher) education, the more difficult it becomes to make any rational justification for libraries in terms which will make an appeal to politicians or civil servants, and hence the difficulty in making a case for, and the resulting poor state, of public libraries.

The case to be made then must depend on the profession itself. And how can one build a vital and viable profession? Fundamentally one needs to look to professional education in its widest sense as the factor which will be the key to the development of archive, library and information networks. Librarian and information workers start off in every country by being clerks, 'failed' teachers or researchers, who may be unsuccessful in their own calling, and who are found an appropriate 'easy' job looking after a library. (Among many principals of grammar schools and high schools in the United Kingdom the developing country syndrome with regard to librarians remains!) It is only gradually that leaders who are both professionally competent and professionally motivated, arise. And it takes a long time for them to make their mark in making a case for their service. Moreover, with the almost instantaneous spread of ideas on a worldwide scale, the possibility of concepts, movements, and ideas appropriate to industrialised countries being inappropriately applied to devleoping countries is all too easy. A few years ago, the International Federation of Library Associations organised a seminar on 'resource sharing' in developing countries: resource sharing in many countries is in fact sheer nonsense since how can one share what one has not got? The tag of 'resource sharing' indeed makes life more difficult for many librarians and information workers since it appeals so strongly to administrators and managers as an excuse for economy. 'Services for the disadvantaged' - a very fashionable objective in Anglo-American librarianship - how valid is it in developing countries where in this field virtually all are disadvantaged? The need is therefore for imaginative leaders of the profession who will see the development of services in the light of the needs of their own country, and who will be concerned not only with the development of libraries, information centres and archive depositories, but broadly with the communication field and with the book trade as a whole.

How, then, are we to accelerate the slow progress we have been making for this is surely the purpose of the exercise? First, we need more programmes for overseas students, which are not only courses in the academic sense (though high academic standards are essential) but courses which will provide

the ambiance of vital professional commitment and an international content. All expansion of this kind needs to be planned systematically, because one cannot suddenly expand educational programmes without the knowledge that there are appropriate jobs for the people one is educating. Moreover, ideally one needs placements in a developed country to place such students so that they not only receive an advanced professional education, but they see the resulting practice - which for the indigenous population is the norm but which will not be approached for some years in their own country. We are providing courses in Loughborough for overseas students who we hope will be leaders of their profession in their own country. They are drawn in general from middle-management, and probably educate themselves as much as we educate them, since they are sufficient in number and come from a wide variety of countries. But overseas education can only be for the few. We have followed the policy of accepting (with rare exceptions) only postgraduate students, since we expect our students to have received their undergraduate education in their own country. It is no service to developing countries to provide undergraduate courses in this or other industrialised countries.

This of course assumes all librarians will be educated to a postgraduate level. One of the problems that has bedevilled library education in particular - archives and information studies are different - is the lack of appreciation of different levels of education. In the case of archives, it is recognised that there will be a graduate corps of archivists, and a group of archive assistants, for whom a different education is necessary. There has been a tendency in libraries to regard one level of training as the only one. This has been true in the United States, where masters' degrees have been the standard, and in Great Britain where a non-graduate course was for many years standard. The fact that in two of the 'advanced' library training countries an oversimplified view of professional education and training has been held over many years has, in my view, distorted, even negated, such manpower planning as has been done. In a study undertaken for the 1974 Inter-Governmental Conference, Dr. Franz and myself tried to lay down guidelines [4] for different levels of training, in order inter alia to clarify issues on manpower planning in the archive, library and information domaine. And those guidelines have been followed more or less by the British Library Association's most recent Working Party on Professional Qualifications.

However, one should not attempt to impose a British or even a Unesco solution on developing countries. It seems there are three elements in any professional formation: (1) general education; (2) professional education;

(3) professional training. The levels to which these are carried, their relationship and development are important. The tendency in most developing countries is to require a degree or postgraduate qualification and then (as has happened in developed countries) get the newly qualified to undertake relatively menial tasks. This is in line with the general tendency all over the world to seek graduate qualifications. This tendency has been strengthened globally by librarians talking of the need for a 'graduate profession', i.e. a profession in which all qualified librarians are graduates, and I have already mentioned the problem of ideas spreading on a worldwide basis.

What is needed is some clear thought by the professionals in each country to determine what is appropriate in their situation. The determination of objectives of a library and information service must to some degree determine objectives for library education. There are plenty of examples in the literature for guidance, though they are interpreted appropriately only with the knowledge of different contexts. For instance, the educational role of public libraries is much more important in developing countries than in industrialised countries because in the latter the educational system is better established and more pervasive, and hence public libraries can turn their attention to other needs. What we need to train at the graduate level are good library managers with an adequate academic background and as Dr. Anna Maria Athayde-Polke pointed out so forecefully in her thesis[5] a concern for the political and social development of the country. Just what this might mean needs further definition, but one of the problems of library education and archive education has been the tendency to concentrate on stock organisation and management to the exclusion of user oriented service and management of personnel. Hence a concern with full-stops and commas rather than the objectives of service. Good library managers need to have some knowledge of management, information storage and retrieval, bibliography, and the basic knowledge of one or more subjects. What developing countries should be aiming for is the equivalent of a joint honours in library and information studies, or library and archive studies, together with another subject. It is something like this that Zambia has, and this is a realistic objective for a limited cadre of librarian/information officers/archivists, which can fill initial professional positions, and from whom the leaders of the profession are likely to come. There are then needed paraprofessional staff who will undertake routine professional tasks - the handling of material acquired, cataloguing, routine organisation of loan services. For these, in general terms, a secondary education is necessary, with a further two years with some

further general education and a more limited training in bibliography, cataloguing and reader services organisation. Training of this kind is being undertaken sporadically in Kenya, at the Nairobi Polytechnic, and at the University of Ghana, among other countries. The difficulty that arises in differentiating between these levels comes partly from the lack of clear thought about different levels of tasks and therefore of the preparatory education required, partly from a deliberate smudging of the differences in the interests of recruitment. The difficulties are compounded also because of the difficulties in judging abilities in rapidly evolving societies so that frequently able students take lower level courses and then are frustrated, being unable to rise to higher positions and more responsible work. It is therefore essential to provide a ladder for the more able of those qualified at a lower level to undertake studies at degree level (or other appropriate level) to allow for the best candidates to make their contribution to the service at the professional level. In time, I have no doubt that there will be further differentiation of professional qualifications. The Library Association's Working Party on Professional Qualifications saw three levels of para-professional qualification (corresponding to, though not the same as, the three levels of the BEC Scheme). For the professional in practice, there is the possibility of a higher degree of a professional qualification. This is much more important in developing than in industrialised countries because conditions for promotion are frequently more rigidly tied to a fixed amount of experience and to specific levels of qualification.[6]

All this may seem to be a domestic matter for library and information personnel, but it does have further consequences. It is impossible to undertake any serious manpower planning when thought is so confused about the objectives of information services themselves, the differentiation of tasks and the objectives of library/information/archive education. And the serious consequences of a lack of manpower planning can be seen for instance in India, where library studies departments have been allowed to proliferate without the requisite increase of job opportunities, and where the library and information profession has a high level of unemployment, or of librarians and information workers employed in relatively menial capacities. Of course this is not unusual in India, but nevertheless one does not wish this situation to be multiplied. There is a danger that it may well be. A doctoral dissertation presented at Pittsburgh by Mrs. Dorothy Obi proposed that 'every university should have its library school'. For a small profession like librarianship, even including information work and archives, this is not sensible. It has happened to some degree in Australia and Canada, and to

some degree in Great Britain; the results is that there is an overproduction of professional librarians. What is happening at the para-professional level is less clear - not least because the professionals are too pre-occupied with their own problems.

The problem about the library, archive and information field is that it attracts a high proportion of those happy to mess about with catalogue drawers, semi-colans, and book-lists, but less disposed to face the client. The less developed the service the more this is likely to be so. It is only in the last decade that, in Great Britain, more healthy extroverts have been attracted. The introvert, in what is still in many parts of the world an inferior profession, is not likely even in the mass to make an impression on the active body politic. In an overseas consultancy the development of courses for children's librarianship was strongly recommended. Librarian colleagues thought it was quite mad and utopian, but the government department concerned was planning such a development unknown to them. The lack of professional 'push' isseen, too, in the approach to computerised services, both in terms of practice and of library education. The necessary 'push' will in practice usually depend on the effectiveness of the relevant professional association, and in developing countries there is a good case for a combined library, information and archive association, (the three branches of the profession are effective in that order). However, it has to be said that the concept of professionalism (like the practice of good welding, for instance) takes a long time to perfect. Even in the organisation of professional associations there are difficulties. In Ghana, for instance, a professional association must consist only of actual professional members - whereas in other countries - with a profession as small as that in the information field - aspirants, unqualified members, and frequently representatives of governing bodies are included. Also it has to be admitted that professional work is difficult where professional jealousies are upmost in people's minds, rather than the common good. It is the devoted professionalism of Kalu Okorie, a John Harris, an Eve Evans, or a Towun Ogunsheye to name only a few which has made librarianship and information work influential in West Africa.

Well, what can one learn from looking at the development of a small profession in developing countries? On the whole its problems are those of the country in which it exists. It is a profession with a basic ground knowledge, but which is dependent on its professionals also having a solid grounding in one or more academic subjects. Its studies have to be related to practical work, and its theoretical and historical bases all of which need to be clearly

distinguished in working out the objectives of professional courses. The profession needs to be firmly bedded in the political and social life of the country in which it exists, and for political and professional effectiveness needs to be organised in a strong professional association, which needs to take cognisance of practice, and principles, both inside the country and outside in international activity. This is particularly and immediately important in the information sector where so many international services exist. Moreover, where these are not used, existing manual systems need to be compatible with international computerised services if much waste is to be avoided in the future. Manpower planning (of whose limits I am well aware) is required urgently. Its effectiveness must depend in part on much clearer concepts of professional service and of professional education. For many of these studies to be undertaken, a great deal more information is required and this is being patiently acquired at Loughborough and in other similar departments in this country. If one believes in raising the quality of life in terms of education, information culture and recreation, a great deal more patient work is needing to be done, and the contribution to the economic life of developing countries is not to be ignored. In the last resort, however, the most effective work must be done by the nationals of the countries themselves.

REFERENCES

1. UNITED NATIONS. Department of Economic and Social Affairs. Proposals for the Second United Nations Development Decade, New York, 1970, p.49 (Undoc. ST/ECA128)

2. 'a system is an order of mutual dependence'. (Mellone, Introductory Text-Book of Logic, Blackwood, n.d., p.213)

3. i.e. Brazil, Colombia, Hong Kong, Iran, Iraq, Kenya, Korea, Kuwait, Malaysia, Malta, Mexico, Taiwan, Turkey, Venzuela, Yugoslavia.

4. Information manpower planning, Unesco, 1974

5. A study of divergence: libraries and society in Brazil within an educational perspective, PhD thesis, Loughborough University, 1980.

6. The Working Party on the Future of Proessional Qualficiations, The Library Association, 1977

IFLA'S ROLE IN AIDING INTERNATIONAL COMMUNICATION BETWEEN LIBRARIES

Else Granheim

President of IFLA

Introduction

At first glance it might seem that the topic of this year's IATUL Conference, "Libraries and the Communication Process", should have preceded that of IATUL's last Conference, held in 1979 in Enschede, the Netherlands. At that time the theme was "Cooperation: its Trends, Possibilities, and Conditions". Although I did not attend the Conference I did receive and read the volume of Conference papers edited by Nancy Fjällbrant. I soon realized that, like the ancient question, "Which came first, the chicken or the egg?", cooperation and communication must also be viewed on a continuum basis; it is not entirely correct to say that one must precede the other.

However, a major distinction must be made between communication/cooperation on the national or regional level and of that on the international level. Of those successful cooperative ventures or networks presented in 1979, the majority of those were between member organizations or institutions united historically, either by purpose or location: the PICA (Project for Integrated Cataloguing Automation) Project in the Netherlands, the SAIDC (System for Automation of Information/Documentation Centres) System in Yugoslavia, cooperation between establishments of higher education in Lausanne, cooperation amongst the science libraries at Oxford, cooperation of Hungarian technological university libraries, cooperation among academic libraries in New Zealand....

These networks were not confronted with the barriers which exist for successful communication on the international level. Here on the international level, one might argue that cooperation must precede communication, for only by agreeing to cooperate for the removal of barriers can we communicate.

It is difficult to delineate clearly these barriers -- they do overlap and solutions to the removal of one barrier may reveal a second barrier. Nevertheless, I feel that the main barriers to communication on the international level are technical, economic/political, and cultural. Although I communicate with several other NGOs -- Unesco, WIPO, ICSU, ISO, FID, ICA -- on a regular basis, I am involved with the work of IFLA daily and will limit my topic to IFLA's role in aiding international library communication.

Technological Barriers

To date perhaps IFLA's most visible achievements for better communication between libraries are on the technological level -- through the standardization activities of its programme of Universal Bibliographic Control.
Different languages arose because of lack of contact among people of distant regions. Modern communication devices, however, have reduced or eliminated the distance factor and contributed to the development of the "many voices, one world" concept. Nevertheless, the many different standards which exist for library communication nationally must be reconciled with those of other nations for a truly worldwide communication system.
That national standards can be adapted for regional networks has been shown by the success of SCANNET and NORDINFO, and that they can be adapted on a global basis falls within the province of IFLA's Universal Bibliographic Control, UBC, programme. I stress here the word "adapted" because the UBC programme considers it essential that a country's standards be permitted in any international scheme. I also wish to reassure you that the word "control" in Universal Bibliographic Control should not suggest a limitation or restriction imposed upon the national material, but should convey the idea of systematic identification for the purpose of locating the material internationally. With this in mind the goal of the UBC programme can be simply stated: to promote the exchange and use of compatible bibliographic records.

The UBC programme has as its focal point a Secretariat located in London which functions as a coordinating and liaison centre with other groups within IFLA and with those outside organizations such as ISO, ISDS, and Unesco, which share with IFLA a community of interests and a common endeavour in the field of bibliographic standardization and related matters.
There have been four major thrusts to the IFLA UBC programme:

- ISBDs
- standardization of forms of headings
- the standardization of machine-readable bibliographic records
- the improvement of national bibliographies

ISBDs

The major tool in bibliographic control is that for assuring a consistent representation of bibliographic descriptions -- the ISBD (International Standard Bibliographic Description) programme of IFLA UBC. A basic pattern for citing all types of materials -- monographs, serials, nonbook materials, cartographic materials, printed music, antequarian, component parts -- has been developed. The development of the ISBDs was not solely the achievement of IFLA's working groups. Other international agencies, for example, IAML (International Association of Music Libraries), IASA (International Associa-

tion of Sound Archives), ICA (International Cartographers Association) have lent their technical expertise to develop these standardized communication devices. IFLA has agreed that the published texts of these ISBDs will stand for 5 years and will be subject to review possibly to appear in a revised form as required in 1982-1983.

Although the ISBDs are concerned with description, use is also made of the available international identification number schemes, the ISBN and the ISSN. These schemes are perhaps the most elementary and non-controversial forms of standardization. They list a primary information source, a book or journal, by an International Standard Book Number (ISBN) or an International Standard Serial Number (ISSN) in which each book or serial published in a cooperating country receives a unique ISBN or ISSN to enable it to be easily and unambiguously identified. These numbering schemes have been drawn up mainly with the requirements of computer cataloguing in mind, but they serve many other purposes in an efficient and economic manner, for example, interlending.

Other international standards, part of the work of ISO TC/46, are available for use in the preparation of bibliographic description, for example two-letter country code, ISO 3166, which has possibilities in a wide range of library activities.

The ISBD does not, however, address itself to the matter of access points, but it does lay the groundwork for possible future agreement about the way in which access points are chosen and their form of representation in a bibliographic file.

Standardization of Forms of Headings

Standardization with regard to choice and forms of headings is more recalcitrant than ISBDs. The increased use of computers in libraries obviates the need for an international approach to the choice of heading, but it makes even more urgent the need to standardize the forms of headings. Hence the current work in progress on the establishment of authority control systems. The principles which will be applicable in mechanized systems will be followed in authority systems maintained manually. It is also important to emphasize the current trend to accept national experience in establishing definitive forms of personal author names. The UBC Office manual, *Names of persons*, is one such tool. Some others are *List of uniform headings for higher legislative and ministerial bodies in European countries*, and *African legislative and ministerial bodies: list of uniform headings for higher legislative and ministerial bodies in African countries.*
In preparation is the *List of legislative and ministerial bodies for Asia and the Pacific.* These publications have all been verified by national authorities.

Standardization of Machine-readable Bibliographic Records

Much work has been done by the UBC Office on the standardization of content and format of machine-readable records

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under the UBC programme. However, hopefully soon to be established is an International MARC Office to be located in Frankfurt, FRG, in the Deutsche Bibliothek. The role of the International MARC Office will be to promote the development of an International MARC Network for the sharing of machine-readable bibliographic records, descriptive and authority, as a major component of the UBC programme. The Universal MARC Format, hereafter called UNIMARC, has been developed to facilitate the international exchange of bibliographic data in machine-readable form between national bibliographic agencies. A number of national libraries have already agreed to use UNIMARC as their exchange format. It is anticipated that each national bibliographic agency will be responsible for the translation of bibliographic records from its national format into UNIMARC for transmission to other national agencies, and will receive machine-readable records in the UNIMARC format from other national agencies and translate them into the national format. Before this is done it is essential that UNIMARC be tested. A test of the 2nd edition of *UNIMARC: Universal MARC Format*, published by the UBC Office, was started in 1980 by the national libraries in Australia, Belgium, Canada, Denmark, France, FRG, UK and the US. They have been sent by the Deutsche Bibliothek a list of 50 commonly held titles. They will code the 50 titles according to their national standards and will encode the records in UNIMARC. The encoded records will be returned to the Deutsche Bibliothek for analysis of the results. This project should highlight problems in using UNIMARC under different cataloguing rules.

Improvement of National Bibliographies

With regard to the improvement of national bibliographies, since these activities of the UBC programme take such different forms, perhaps one example can be given here. At the request of a number of Commonwealth countries in Africa, the UBC Office is compiling a directory of retrospective national bibliographies of the Commonwealth under the sponsorship of the Commonwealth Secretariat. The entry for each country has been checked and approved by a representative in that country. This is to be followed by the preparation of guidelines for compiling retrospective national bibliographies.

Standardization activities for better library communication are not limited to the UBC programme. A standard request and dispatch form for interlending has been developed by the IFLA Office for International Lending. An IFLA publication, *Letters for the international exchange of publications: a guide to their composition in English, French, German, Russian and Spanish*, offers all of the standard phrases essential to the writing of exchange letters. It is numerically coded, and if, for example, one wishes to write in Spanish, "we propose that cash payments be made by credit transfer.", one turns to the same number code in the Spanish section, B 1.6.2, for the same phrase. This standardized reference tool certainly makes communication simpler.

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Economic/Political Barriers

Standardized communication formats have increased the awareness of the existence of a publication and where it is held, and how to request it and send it. Other barriers, economic or political, can influence its availability and thus undermine these technical achievements. When information is viewed as an economic resource and a national asset, its potential power to solve national problems has prompted many countries to guard it as a natural resource. Thus much valuable commercial data - patent and new product information, market analysis, commodity price and supply projections, industrial resource findings, etc. - are available only to a chosen few. In addition, in a conference to discuss international cooperation, representatives from some countries were reluctant to share scientific and technical information, stating that bilateral, rather than international, exchange arrangements are usually more suitable. The inferior position of developing countries in this regard has serious consequences for their development plans.

These barriers, then, fall within the scope of IFLA's programme of Universal Availability of Publications, monitored by the UAP Office in Boston Spa, UK. Its objective is the widest possible availability of published material (that is, recorded knowledge issued for public use) to intending users, wherever and whenever they need it, as an essential element in economic, social, educational and personal development. To work towards this objective, the programme aims to improve availability at all levels, from the local to the international, and at all stages, from the publication of new material to the retention of last copies. Of course, much has been accomplished by the UAP programme with regard to exchange and interlending internationally. Other research studies in progress will also result in improved availability. A few of these are: a substudy of transmission times of requests and documents in three regions of the world; a study of national acquisition policies and systems; and a study of commercial book supply to libraries. Other studies of relevance to UAP are being conducted by Sections of IFLA. These include: a study on a model law for legal deposit; a study to determine guidelines for the compilation of union catalogues and union lists of serials; and a study of the availability of official publications in libraries. However, with regard to developing countries, availability is not the only problem. One of the concerns voiced by Professor Neelameghan of the Philippines during his speech to the IFLA General Conference in Manila last year was the fact that developing countries have concentrated on access rather than production. He points out that one of the areas NGOs can help to aid developing countries is by the promotion of their publications capabilities.

At a pragmatic level solutions to the political problems of communication depend on finding a balance between the interests of the State and of the rights of access to information. These solutions will necessarily vary according to the political structure, the degree of development and the size

and resources of each nation. Although many countries have internal copyright agreements, the difficulties in legislating copyright for transborder data flow must be resolved.

IFLA has begun a study, An International Study of Copyright of Bibliographic Records in Machine-readable Form. It is recognized that a free flow of information between national bibliographic agencies is a pre-requisite for the realization of Universal Bibliographic Control. One might even state that the unconstrained flow of basic bibliographic records, internationally, is essential to research and scholarship as well as to the advance of civilization, generally. Exceptional restrictions (whether economic, legal, bureaucratic or technical) placed on such records are detrimental.
It is, moreover, essential that bibliographic records can be used by the receiving bibliographic agency without formal, or legal barriers. The first phase of the study is to ascertain from national bibliographic agencies already producing such records information relating to the copyright of their records and the problems they encounter in their exchange. The second phase of the study will be to find out the problems relating to copyright in national bibliographic organizations of the commercial or semi-commercial type producing machine-readable records for distribution and exchange to subscribers within a country and sometimes outside. These phases will be conducted by a questionnaire. Complementary to these two questionnaires will be to find out the background and current developments on the copyright of bibliographic records produced by abstracting and indexing services and other information organizations providing bibliographic data bases.
A second study begun by IFLA with regard to copyright is a Study on Copyright of Materials for the Handicapped. The study will provide an overview of library services for the handicapped, both existing and desirable. International copyright conventions will be surveyed and examined to provide a framework for what is permissible within their present parameters and what is possible and practical as far as changes are concerned. The end result of the study should introduce various possible solutions to copyright problems, with supporting arguments, for consideration within national and international contexts and present a series of resolutions with recommendations for an approach to implementation.
Both of these copyright studies are being sponsored by the Council on Library Resources.

Other aspects of the copyright problem may be addressed at the Unesco/IFLA International Congress on UAP, to be held in May 1982. The UAP Congress will involve representatives of national governments, of national and international library organizations, librarians from all over the world, booksellers, publishers.... Among its objectives will be to help commit national governments to create national infrastructures of a UAP system, a national network of channels through which material held in different places can be made available wherever it is needed. The development of national infrastructures is somewhat related to the Model Law for Legal Deposit, drafted by Ms. Jean Lunn and reviewed by the IFLA Sections of National Libraries and Bibliography in Manila in 1980. The first objective of a legal deposit law should be

the accumulation of a national collection to preserve, transmit and develop the national culture. The next major objective of a deposit law should be the compilation and publication of the national bibliography.
Moreover, the UAP programme stresses that each national government should accept and declare the general principle that citizens of other countries have the same right to access to the non-confidential publications of the representative country as its own citizens.

Allied to the question of copyright in so far as it seeks to make information internationally available with the minimum of restrictions is Unesco's Florence Agreement, adopted in 1950 on the Importation of Educational, Scientific and Cultural Materials. Under this agreement contracting States agree not to apply customs duties or charges on the range of publications and other materials listed, which are produced by other contracting States. The Protocol to the Florence Agreement, among other changes, extends duty-free status to audio, visual and microform materials. IFLA has urged its Members to exert their influence with their governments to adhere to the Florence Agreement and/or its Protocol to the Agreement.

Cultural Barriers

With regard to cultural barriers to communication, perhaps the language barrier presents the greatest obstacle to international communication. For communication between libraries, this can be the exception rather than the rule. IFLA has four official languages - English, French, German and Russian - and if we surveyed our 1004 members in 111 countries, we would find that perhaps working knowledge of over 100 other languages is available. For example, on our five-member Programme Management Committee, which monitors the UBC, UAP and International MARC programmes, we can communicate in 7 languages (but not all at the same time and not all with each other!). Our members are very willing, even anxious, to provide translations of library documents into their own languages. The UBC Office frequently receives requests for permission to translate or adapt its publications. A full list of these translations is given in the *Annotated bibliography of the ISBD*, and this list is updated in *IFLA Journal* and *International Cataloguing*. The ISBD(G) has been published in Portuguese and is underway in German; the ISBD(M) has been published in French and is underway in Arabic, Persian, Sinhala and Tamil, Dutch, Italian and Serbo-Croat. Other recent UBC translations include *Names of persons*, *UNIMARC*, and *Annotated statement of principles* into Japanese. *Names of states* has been published in 6 languages - French, German, English, Spanish and Russian, plus the original.

All efforts are made to respect fully the national practice with regard to standards and norms composed for developing countries. This is essential for preserving a country's national heritage and for that country's contribution to the cultural heritage of mankind. However, the national biblio-

graphic agency should undertake the responsibility for preparing the comprehensive bibliographic records of its national imprint and in so doing should follow international cataloguing principles and adapt international standards. IFLA has participated in workshops with this "adaptive" principle in mind, for example, the Anglo-American Cataloguing Workshop held last year in Singapore.
In 1982 there will be a small meeting in Canada after the IFLA General Conference. This meeting will carry on and complement the 1977 International Congress on National Bibliographies and will deal with various aspects to improve and standardize existing and proposed cataloguing-in-publication programmes. Among the background documents being prepared for this meeting are two outlining the requirements for establishing a CIP programme in developing countries with two contrasting environments (Nigeria and Singapore).
It is recognized that the acceptance and use of standards for libraries will have greater impact if these standards are promoted by local leaders in the library community. Consequently, IFLA holds, every second year before its General Conference, a Pre-session Seminar, co-sponsored by Unesco, with experts from developing countries to discuss such topics as library education programmes and resource sharing of libraries. Although these topics may seem rather remote from communication barriers, the intensive working environment, with distance eliminated, can promote discussion and find solutions to programme development in common areas. The interpersonal communication networks developed during these Pre-sessions, and also during IFLA Conferences, are invaluable. We learn with whom to communicate in given regions, who the experts are, and whom to call upon in developing regional communication infrastructures.
In addition, IFLA has participated in a project, the ELIPA project, which will identify Experienced Library and Information Personnel in the developing countries of Asia and Oceania. It is hoped that a project of this type can be undertaken in the African and Latin America & the Caribbean regions.

Communication between libraries should also be related to the various needs of different communities within countries -- rural populations, the handicapped, immigrants -- the culturally deprived. Their needs are often overlooked in developing a global information system. IFLA has several Sections, Working Groups, and Round Tables engaged in various studies on how best to meet these communication needs. In addition, a new Working Group on User Research should offer some solutions.

Conclusion

I started by saying that the elimination of one barrier may reveal a second barrier. Certainly it is easy to see that if, because of standardization, we can communicate more readily and efficiently, political or economic barriers may block that communication. I feel that the solution to the removal of these barriers will be found in the solution to the basic problem as indicated in the MacBride Report:

"that of linking communication facilities and activities to other national objectives, or in other words, that of integrating communication development into overall development plans". Communication policies should be formulated to supplement and interrelate with those in other fields, i.e. education, culture and science. We know that this type of mission-oriented network can transcend national borders. The MacBride Report also stresses that "communication policies should be limited to structural and material issues, and not be used to dictate content of communication or restrict expression of diverse opinions". Certainly, standardization activities, structural issues in the communication field, will aid overall development plans. Here communication techniques are being developed by national groups of experts - truly horizontal communication among equals - for the benefit of all nations, both developed and developing. In all attempts at standardization, great effort is made to adapt a nation's standards to international standards. This will preserve the cultural heritage of a nation and its contribution to the cultural heritage of mankind, a material issue. However, "dictating content" and "restricting expression" are political/economic issues. These can only be solved by cooperation - cooperation for better communication between libraries - by NGOs and IGOs, and associations such as IATUL and IFLA.

Bibliography

1. ANDERSON, DOROTHY. Bibliographic Control in Practice. IFLA Journal, Vol. 6, No. 3, pp. 242-248.

2. HICKEY, DORALYN. Bibliographic Control in Theory. IFLA Journal, Vol. 6, No. 3, pp. 234-241.

3. IFLA International Office for UBC. Annual Report. IFLA Journal, Vol. 6, No. 2, pp. 142-146.

4. IFLA Medium-Term Programme, 1980-1985 (draft version, unpublished).

5. Library Cooperation: Trends, Possibilities and Conditions. Proceedings of the Eighth Meeting of IATUL, Enschede, May 28-June 1, 1979, ed. by Nancy Fjällbrant. Sweden: Chalmers University of Technology Library, 1980.

6. Many Voices, One World. Report by the International Commission for the Study of Communication Problems, President, Sean MacBride. Unesco: Paris, 1980.

7. NEELAMEGHAN, A. Some Issues in Information Transfer: A Third World Perspective. IFLA Journal, Vol. 7, No. 1, pp. 1-11.

SYSTEMS VERSUS USERS: AN ANALYSIS OF THE ART AND/OR SCIENCE OF SEARCH NEGOTIATIONS

Kathleen T. Bivins

Guest Professor, Linköping University, Linköping, Sweden

1. Introduction

Each time a user has a problem which necessitates using an information retrieval (IR) system of any kind, each time that happens, a negotiation of some kind must take place. This negotiation can be between the end-user and the system, between the end-user and a librarian/mediator, or between the librarian/mediator and the system. The process is complex and delicate, involving, variously, deductive and inductive logic, combinatorial thinking, knowledge of system structures, knowledge of knowledge structures, personal communicative abilities, guessing, sheer speculation, and, in the end, luck.

All this just to find a book in a library, to take a simple example? Yes and no. In a typical large research library, once a decision is made to add a document of some kind to the collection, the process of deciding where to place it within the context both of its subject content and the system structure must be made. And therein lies the first part of the problem. The matter of access by title, author, and/or other specific information unique to a particular document is not of concern here. What is of concern, of course, is the assignment of subject terms from an indexing language. Generally speaking, indexing languages can be assumed to include classification systems and the various forms of thesauri and simpler alphabetical subject heading systems. The person responsible for the indexing decision is working both from his/her framework, as well as from that of the indexing language. In addition, since it is normal practice for an indexer to be instructed to consider the user of the IR system, a situation exists whereby the indexer is attempting to figure out what a user would be apt to look for in regard to the document in question. Who knows? Or can really say? So, some knowledge (of the indexing language and of the knowledge structure of the document), some technical competence (in applying the "rules" of the indexing language) and some guesswork is involved. Now, the user must do a sort of reversal of this process. S/he must deal with his/her information need in all its vagueness and try to both figure out how the system works as well as how his/her need can be expressed in the terms of that system. The user is really the only one who can truly say what is his/her need, although this is frequently a very difficult process. Indeed, there is some validity in saying that the system itself may well influence that need, perhaps in a way that wouldn't have been the intent of the user if s/he had known of the influence! More often than not, this hapless user has little knowledge of the system, and finds it a rather mysterious, not to say arcane, procedure to delve into a formal IR system. In the situation where the user asks for the aid of an intermediary (mediator), we add yet another dimension, that of the person-person communication. At this stage, one might well wonder how indeed anyone manages to retrieve anything at all from an IR system! Of course, in many cases, users find information which presumably satisfies their needs, and when looking for specific information, that is not so difficult - provided that the IR system has the document in stock. So, what have we arrived at? A person on the one hand indexing from certain sorts of conditions, and

a user searching from other sorts of conditions, and often an intermediary as a sort of buffer between the two. Having attempted to describe the parameters of the IR process I shall proceed to discuss IR systems in general, followed by different search and research approaches, along with alternatives and concluding remarks.

2. IR systems

As a generalism, one might say that IR systems are system, rather than user, oriented. If one is discussing, for example, a card catalog for a large research library, it is possible to state that the catalog is constructed by librarians for use by librarians. It is well-known that card catalogs are complex structures which are based on an equally complex series of rules and elaborations thereof. It is also well-known that librarians have long since constructed a rather neat set of principles for the establishment of just such complex card catalogs, and therefore have provided a basis of justifications for these IR devices. Of course, the problem of use of these catalogs is a difficult one. Not only is a card catalog hard to use, one often wonders how much of the elaborately constructed information is actually pertinent. We do not know these answers, despite the fact that the problem is one which is quite frequently addressed. In the same mood, one might question the current machine-readable files of bibliographic references which have been constructed more or less in the same spirit. The wonders of online searching and the like have long since become a fixture of sorts in the information world, but again, the same cavils apply to these types of systems. At best, they provide a union catalog sort of approach to different subject areas, that union catalog being in machine-readable form. One might say that this could provide a speedier mechanism for collecting literature and for searching that same literature. While this is possible, it is more likely that the large machine-readable data bases which exist (many hundreds at this point) probably do not significantly improve service to the end-user.

The systems here generalized about are most certainly document-oriented, and even system-oriented, systems, rather than user-oriented, which may account for their relative failure. The most common means of searching them is none other than that of trial-and-error, certainly the most inefficient method of problem-solving, but at present about the only workable approach available to system users. The aim of the "trial-and-error" method is to produce relevant documents/information (almost invariably documents) with as few trials as possible and with a minimum of error. This is done primarily through manipulating the document surrogates, be they cards or representations in a machine-readable file. In order to attempt to improve performance of the system (and thereby providing the most relevant documents with the least irrelevant ones) many efforts have been made to manipulate (usually) subject terms. One can easily see that this is an effort to improve the system, with, it is to be hoped, benefits to the end-user of that system.

Why has this approach been taken in this field? The answer is at once simple and complex. Simple, because there has long been a number of assumptions made regarding IR systems, and complex, because it has seemed next to impossible to construct IR systems without making these kinds of assumptions. The assumptions made are that relevance (the primary measure for determining "success" of an IR system) is a function of both the document and the question, and that the question represents accurately the information need. Both these assumptions are integral to the vast majority of IR system construction, development, and manipulation. Of course, the validity of these assumptions, while frequently questioned, has never been wholly verified. In fact, the rather large body of literature which has grown up around the assumptions has for many years effectively removed attention from the actual user of the IR system in favor of the system itself and its contents, the

representations of documents. Thus, comments on the "art" and/or "science" of search negotiations must dwell heavily on this aspect of IR systems. If one makes a rather broad assumption that the work done in attempting to improve the effectiveness of IR systems, based on relevance, is "science", then one must also assume that the construction of search languages and the learning thereof by intermediaries (or end-users) has some element of "science" to it. The "art" may indeed be in the ingenuity of intermediaries to "guess" at the mechanics of the system to attempt to retrieve relevant information.

3. Search approaches

In this section, I shall focus on the various ways and means of search negotiating, be it within manual or automated IR systems. I shall by no means attempt a thorough review of the rather vast literature, but shall direct my comments to what seems to be a stream of effort over the years, with digressions on the popular methods of automatic term manipulation.

3.1 Traditional approaches

Two threads are apparent in the literature of the past twenty or so years. First, there are studies involving question negotiation, usually focussing on the "reference" process, and, second, there are information transfer studies which attempt to trace information flows in varied settings among different population groups.

Question negotiation has been the focus of a sizeable number of studies appearing in the traditional library literature (1-2). The majority of these studies focus on the role of the reference librarian as the facilitator of a particular IR system and, as such, I consider them too restrictive to be discussed in any further detail. Other studies, however, attempt to analyze the question negotiation process as a process in itself, and are not necessarily restricted to a particular institutional setting.

For example, Shera's model (3) introduces the importance of the personal characteristics of both the system user and the negotiator, and incorporates a feedback loop. Jahoda and Olson (4) and Rees and Saracevic (5) are particularly concerned with the formulation of the "information need", while Taylor (6) has analyzed the process itself in a more comprehensive manner. In Taylor's work, a potential user of an IR system is seen as an individual who has doubts which can be resolved by information. Formulating a question in regard to these doubts is considered the critical aspect of the search process. Taylor's analysis of question formulation takes the form of four levels: unarticulated need for information, conscious description of the need, formal statement of the need, and the question stated to the formal store. In addition, before the question is actually presented to the formal store, it undergoes five "filters" which enable the negotiator to pre-select relevant information. These filters involve subject determination, user objectives and motivation, user personal characteristics, relationship of inquiry to files, and acceptable answers. Taylor's model, while not invalid, suffers from the assumption that the user has an ability to perceive a gap in his/her knowledge space. Indeed, this assumption has indirectly led to a number of interesting studies which are discussed in another section.

Some relevant studies have been performed which are concerned with analysis of information needs and information-gathering processes. These are concerned with a more generalizable process which is irrespective of the user-librarian negotiation, and are thus grouped under the broader heading of information transfer studies. Harmon (7) has established a four-

stage model of "user information need" that parallels Taylor's model of the four levels of questions. He refers to five variables associated with user information need identified in a study conducted by Cuadra and Katter (8). These include the intended use of the information, differences in the user's background knowledge and "cognitive style", the influence of economic and temporal pressures, the limits placed on the information sought, and user reaction such as "surprise". Harmon also cites a study by Rees and Schultz (7) that suggests the importance of these variables in user information needs.

Harmon's model of user information need comes closer to representing the overall search process than does Taylor's model of the levels of questions. In Harmon's model, the user gathers information, places it in order, perceives the gaps in his/her knowledge and gathers the specific information to fill these gaps. Harmon speculates that the formation and articulation of questions asked differs with each of these four stages. As the user gathers more information and perceives the gaps in the order of his/her knowledge, s/he is better able to form specific questions expecting specific information in response. Harmon further speculates that information systems could be designed to enhance the assistance to the user gathering and ordering needed information during each of these stages.

Kennington (9), in an article on managerial decision-making, outlines four modes of scanning, four different levels of information search applicable to the needs of the searcher. These modes consist of undirected viewing, which is aimed at the user who has not defined an information need, and conditioned viewing, which has the searcher looking for more specific kinds of information. In the third mode, a limited and unstructured search is conducted, while in the fourth mode, a fully structured, fully defined search takes place in a formal system, for specific literature or information.

White (10), in her study of the research behavior of academic economists, identifies three stages of research which can be subdivided into seven information functions. In order of occurrence, these information functions are perception of idea, definition of problem, development of methodology, provision of data, suggestion of information source, analytical assistance, and practical assistance. While her study was not designed for the purpose of examining relevance judgments, the results indicate a general agreement with the findings of others. The economists were increasingly aware of their specific information needs as their projects progressed, and White notes that this acute awareness seemed to peak during the methodology phases of the research projects.

These studies have considerable value, but are limited in that they focus on specific population groups, institutional settings, or interactions with formal IR systems. Let us now have a look at the "non-user"-oriented work to see what is going on in that area.

3.2 Manipulation techniques

In recent years, there has been an increasing amount of research in the area of manipulation of the search language (i.e., the terms employed in the Boolean mode which "match" terms in the document description) of automated IR systems, in order to attempt to provide some more satisfactory results. In order to improve the effectiveness of retrieving documents from the store, a number of theories and models have been proposed, almost invariably based on a form of mathematical reasoning. Fuzzy set theory, utility theory, cluster models, vector space models, and probability theory have all been used to address the problem of IR. Applications in IR systems based on theories and models involve most frequently, term weighting, cluster files, automatic feedback processing, and ranking algorithms (11-13).

There has developed a controversy between the fuzzy set adherents and those favoring probability theory, the two theories which have been applied more often than others. Fuzzy set theory allows for degress of membership in a set, an admittedly appealing notion in the fuzzy area of IR and relevance, but while it seems somewhat analogous to IR, its very imprecision seems to be a barrier to further understanding of IR systems. Probability theory, on the other hand, is significantly better developed in IR, and an increasing amount of work is being based on it. The central notion here is that it is possible to estimate the probability of the relevance of a given document. If one assumes this, then various activities can take place, such as using the theory to develop indexing and retrieval models based on word occurrences, creating document vectors (one here assumes that the pattern of index terms in relevant documents differs from that in non-relevant documents), and rank ordering according to probability of relevance.

One of the few applications on a large working database is dependent on probabalistic associations being used to find terms associated with yet other terms. These associations are based on term occurrences in a Boolean query retrieval set, and the frequency of terms in a database (14). Another approach uses automatic term weighting based on relevance feedback. Here, an online dialog permits users free term listing, following which system computations weight terms and rank retrieved citations. The user then enters relevance judgments on the ranked display and the system computes new term weights, thus modifying the query (15). These two methodologies are both operating on live systems, as opposed to the experimental work done in more-or-less laboratory environments. At the present time, the use of probability theory with weighting, ranking, and automatic or user-generated feedback, seems quite promising from the system point of view.

In addition, some work is being done on alternative methods for IR. The use of free text, as opposed to controlled vocabulary terms, the use of natural language in "sentence" form, and the use of dialogs are all areas of current interest. Free text searching, as currently practiced, has been employed in the models described above. Most of the uses of natural language in IR are in the form of attempts at dialog situations (16). Invariably, these dialogs are quite rudimentary and it is dubious as to whether they are beneficial for users or not. Other approaches involve different forms of display of the contents of files. One that is conceptually similar to IR thesaurus approaches is the use of document-to-document relationships (citations) coupled with subject terms in a graphic presentation (17). This work is quite interesting, and will soon be implemented in a database.

Now, having presented (albeit briefly) the "scientific" approach, we return to the "art" approach, which is now being rather interestingly investigated.

3.3 Cognitive methods

The one large issue which we have not yet addressed except in passing is that of the end-user. As stated previously, end-user oriented (or user-friendly) systems consist by far and large of dialog-based approaches, or attempts at freeing the end-user from Boolean commands and the like. The major drawback to this is the assumption that the system designer and those who provide the input make in regard to the user (to return to our initial comments). It is assumed that the design structure and input choices are appropriate to users (to repeat), however, very little is known about that user. If the computer or other IR system is the intermediary, than what is critical is the dialog between producers and users. This dialog is the means by which the capacity and capability of the system can be best utilized.

If one can discern something of the process by which users (whether end- or intermediate) search for information, then it may be possible to implement other than the current assumption-based systems, which cannot be considered as more than ad hoc representations. In discussing user-system interactions, what is really being addressed is the fact that very often (and to some degree, always) systems are being used in ways that do not agree with the assumptions on which they are based. It may be that some form of user-system dialog will be the most effective means of interaction. A dialog which attempts both to represent the assumptions of the system as well as the assumptions of the users may well be an appropriate step. Some work along these lines is currently underway in IR (18-22).

In my opinion, the most exciting contributions to the literature are in the area of cognitive processing of system users. There are a few studies here, which consist of both theoretical and experimental efforts aimed at an understanding of what it is that occurs during the search process. This cognitive approach has been taken by Ingwersen and Kaae (20), Mark Pejtersen (22), Belkin and Oddy (18) and Bivins (19-20) among others. Significant elements of these studies include the use of the "thinking aloud" technique (23) combined with various analyses of data so collected. It is most interesting that the "thinking aloud" technique is gaining both popularity and credibility among researchers in this field. While long-validated as a methodology, it of course suffers from the problem of great obtrusiveness. However, much data can be generated through the use of verbal protocols (another name for data generated through this means), the majority of which come from tape recordings, sometimes combined with video recordings.

Although Ingwersen et al. did not pioneer the method in this field (24), their work is certainly the most thoroughly performed and documented, and should serve as a model and a pattern to current and future researchers. These researchers, at the Danish Library School, were primarily concerned with attempting to find out something of patterns and the like in search method/routines of public librarians and/or students searching in public libraries, with an eye towards improved educational methods in the library school. Their careful work and extensive data analysis has led to more experiments and has shown promising leads for future studies.

Mark Pejtersen, also of the Danish Library School, using the same methodological technique, was able to develop a new kind of classification scheme for fiction in public libraries. Based on analyses of verbal protocols, she developed a scheme which involved types and characteristics of fiction works, and which was used by librarians in directing users to what they wanted. An unexpected side result of this was that many of the books which had not previously circulated were borrowed by readers! This is a small, but convincing, piece of evidence for developing user-oriented systems. Readers really borrowed books which were classed (in a multi-dimensional way) through a scheme developed from <u>their</u> (the readers') wants and needs.

Belkin and Oddy have been working on a design study for a system which would be based on a model other than the traditional one. They first postulate that IR system users have an anomalous state of knowledge (ASK), whereby they cannot specify exactly what they need, and therefore can't be expected to "match" that ASK to the specific terms required by an indexing language. Once again, using the "thinking aloud" technique, users of a particular library were queried as to their reasons for coming there. The recorded information was transcribed into verbal protocols, which were then subjected to rather rudimentary linguistic analyses, resulting in the development of what can be termed association networks revolving around the central concepts expressed in the protocols. Next, the sujects queried were asked to

verify the networks, which were accordingly adjusted. In order to attempt to construct a novel IR system, Belkin and Oddy performed a similar linguistic analysis on abstracts of certain articles, sent the resulting networks to the authors, and, again, made adjustments as necessary. They then had the beginning of what would be an IR system - document concepts expressed as networks of associations, and representations of verbal protocols expressed in a similar way. It is obvious, of course, that the proposed system would attempt to develop an ASK of the user (through word co-occurrence strengths and so forth) and then search its other networks for, presumably, relevant information. It will be most interesting to see whether, in fact, and how, if so, such a system would actually work.

Bivins has performed some experiments aimed at determining a level of indexing expected by users versus the actual level used in the system. This was done by presenting IR system users with a search query, and then asking them to "think aloud" while developing search terms they thought might be appropriate for the query. These verbal statements were subsequently transformed into lists which the same subjects used as points of departure for actual search on the same query in a real IR system. Subjects were again tape-recorded during the actual search. Results indicated an extremely high level of consistency in initial development of search terms, and the expected lack of agreement with terms actually used in the system. This is an interesting finding, and could have some impact on the development of user interfaces to IR systems.

4. Conclusions

Having at some length discussed some of the pertinent literature in the area of search negotiations (and no doubt neglecting other pertinent material!), I shall attempt to pull it together. The continuous stream of literature in this area, whether it be intuitive, system, "scientific", or otherwise-oriented, is a valuable indication of the concern for both investigating and attempting to develop, various kinds of interfaces between the IR system and its users. Have we made progress? And is there any sign of model and/or theory development? To the first question, I would say that yes, we have made some progress, but partially because of the lack of some kind of concerted model and theoretical development, our efforts, on the whole, remain rather diffuse. The encouraging fact of a number of researchers banding together regularly to discuss IR, and, in particular, user-oriented theories, as well as an increasing interest in methodological issues, gives one considerable hope that we may yet develop a serious body of literature and serious students. The steady increase of interest in "cognitive" research in IR is also extremely heartening. This is certainly a fruitful area to investigate now, as witness the developments in many other areas, some of which may surely bear relevance to ours. We are most assuredly still in the "art" stage, but there are signs that we may some day progress to a more ordered stage, perhaps even that of "science"! (26)

References

1. BREED, P.F. Analysis of reference procedures in a large university library. Master's thesis. Graduate Library School, University of Chicago, 1955.

2. COLE, D.E. An analysis of adult reference work in libraries. Master's thesis. Graduate Library School, University of Chicago, 1943.

3. SHERA, J.H. The challenging role of the reference librarian. In Knowing books and men, knowing computers, too. Littleton, Colorado, Libraries Unlimited, 1973.

4. JAHODA, G. and OLSEN, P.E. Analyzing the reference process. RQ, 12, 1977: pp. 148-156.

5. REES, A. and SARACEVIC, T. Conceptual analysis of questions in information retrieval systems. In Annual Meeting of the American Documentation Institute, part II. Washington, D.C., ADI, 1963.

6. TAYLOR, ROBERT S. Question negotiation and information seeking in libraries. College and Research Libraries 29, 1968: pp. 178-194.

7. HARMON, GLYNN. Information need transformation during inquiry: a reinterpretation of user relevance. In Proceedings of the American Society for Information Science, v.7, 33d Annual Meeting. Washington, D.C., ASIS, 1970, pp. 41-43.

8. CUADRA, C. and KATTER, R.V. Implications of relevance for library operations and training. Special Libraries, 59, 1968: pp. 503-507.

9. KENNINGTON, DON. Scanning the operational environment: the librarian's role. Journal of Librarianship, 9, 1977: pp. 261-269.

10. WHITE, MARILYN DOMAS. The communication behavior of academic economists in research phases. Library Quarterly, 45, 1968: pp. 178-194.

11. MCGILL, M.J. and HUITFELDT, J. Experimental techniques of information retrieval. In: Williams, M.E., ed. ARIST, v.14. New York, Knowledge Industry Publications, 1979.

12. RIJSBERGEN, C.J. VAN. Information retrieval. 2d ed. London, Butterworths, 1979.

13. ROBERTSON, S.E. and SPARCK JONES, K. Relevance weighting of search terms. JASIS, 27, 1976: pp. 129-146.

14. DOSZKOCS, T. AID: an associative interactive dictionary for online searching. Online Review, 2 (2), 1978: pp. 163-173.

15. JAMIESON, S.H. and ODDY, R.N. Low-cost implementation of experimental retrieval techniques for on-line users. Proc. of 4th International Online Meeting. Oxford, Learned Information, 1980.

16. ODDY, R.N. Information retrieval through man-machine dialogue. Journal of Documentation, 33 (1), 1977: pp. 1-14.

17. SMALL, H. Co-citation context analysis and the structure of paradigms. Journal of Documentation, 36 (3), 1980: pp. 183-196.

18. BELKIN, N.J. and ODDY, R.N. Design study for an anomalous state of knowledge based information retrieval system. Final report on Grant 5/1 SG 09, 2May78-15June79, to the British Library Research and Development Department, September 1979.

19. BIVINS, K.T. Users of information retrieval systems: a frame-theoretical approach. Proc. 3d International Research Forum in Information Science. Oslo, Statens Bibliotekskole, 1979.

20. BIVINS, K.T. Project Athena: are there basic levels of search? (In preparation)

21. INGWERSEN, P. and KAAE, S. User-librarian negotiations and information search procedures in public libraries: an analysis of verbal protocols. Final research report. Copenhagen, School of Librarianship, 1980.

22. WILSON, T.D., STREATFIELD, D.R., MULLLINGS, C., LOWNDES SMITH, V. and PENDLETON, B. Information needs and information services in local authority social services departments (Project INISS). Final report to the British Library Research and Development Department on Stages 1 and 2, October 1975 through December 1977. 2 vols. 1978.

23. MARK-PEJTERSEN, ANNELISE. Design of a classification scheme for fiction. In: Harbo, O. and Kajberg, L., eds. Theory and applications of information research. London, Mansell, 1980: pp. 146-159.

24. VYGOTSKY, L.S. Thought and language. Cambridge, Mass., MIT Press, 1962.

25. CARLSON, G. Search strategy by reference librarians. Sherman Oaks, California, Advance Systems Division, Hughes Dynamics, 1964.

26. ERIKSSON, L. Personal conversaion, 1981.

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THE THIRD WAVE OF LIBRARY AND INFORMATION WORK

B.K. Oldroyd

Head of Library and Information Service, European Space Research and Technology Centre of the European Space Agency, Noordwijk, Netherlands.

The technological advances which will impact on library and information work from now up to the end of the century are already identifiable. Several of the current trends give rise to a conflict of interests between possible new entrants to the field and already established services. Our problem today is to identify the type of service that we should be offering in the next two decades and the part that we should play in the process of information transfer from source to end user.

Libraries have not always been, in the past, as much involved with advanced technology as they are today. If we look back historically to the three periods identified as describing mankind's technological development, that is, the agricultural, the industrial and the micro-electronic periods, it is not so easy to find similar periods for comparison in our own field of professional advancement. Perhaps we can say that the wheel and the plough of the agricultural period find their counterparts in the library field in the invention of paper and in the invention of movable type, and we can perhaps also include that addition of the last century, the introduction of the card catalogue. Over all these centuries, libraries were essentially repositories and collection forming was the task of their custodians.

The beginning of an industrial period for the library could be said to have begun only around the middle of the present century. The phenomenon which sparked off the developments of this period was the sudden explosive growth in the amount of published material, especially in science and engineering which followed the end of the second world war. At this time, the concept of information handling and transfer came to the fore; specialists in information systems arrived on the scene; in-depth indexing and sophisticated retrieval methods were introduced. Many countries developed their national bibliographic recording services, centralised cataloguing services and their national library collections to handle the increasingly wide international coverage of the major secondary indexing services. During this period too, the possibility of introducing computer handling of data both for library operations and for information retrieval was quickly recognized and exploited. However the advantages and the potential of networking for information dissemination were not so quickly understood. Only during the last seven or eight years have the possibilities offered by a distributed network been available to us in Europe.

Inspired by these advances, fast access and rapid service became our aim. Our users were supplied with personalised profiles from our new machines and our readers' patterns of communication became a subject for our research.

The trend that we have just observed, of the application of electronic data processing to information handling and retrieval is the trigger point of a new period of development. The technological advances in micro-

electronics have so shrunk the world from a communications viewpoint that information handling has suddenly found itself swept into the main stream of technical activity. As we shall see, information will now tend to be generated at the terminal and to be retrieved from the terminal. The problems which now preoccupy us are the type of systems which will link the terminals and the role that we shall play in exploiting some of these links. The technical factors which influence the setting up of new systems may, on the one hand, improve existing facilities, but on the other hand, they have a marked tendency to short-circuit traditional spheres of activities. We can claim now to be entering our third period of development. For the first time ever we can perhaps claim to be in phase with and even at the forefront of, world technological development.

Six closely interlinked factors are responsible for the current change of pace.

The first factor, which we must not overlook, is the continuing high level of world output of information both in text form and in raw data form. In conventional publishing alone, between two and two-and-a-half million primary contributions in science and technology appear annually in all languages. I have as yet seen no attempt to quantify the increasing amount of information in raw data form which is now becoming available.

The second factor is the increasing use of the word processing machine which, by releasing data directly in digital form has overcome the cost barrier to the creation of machine readable records.

The third factor, closely linked with the previous one, is the continuing reduction in the costs of mass storage. The trend to full-text storage of documents can only tend to increase as the size and cost of memories decrease.

The fourth factor is the improvement and extension of telecommunication coverage without which the previous factors could not be readily exploited. Shortly, developments in fibre optic links and in satellite communications will make it probable that multiple holding of records in several machines, even for world access, may become superfluous. Complex networks, not necessarily visible to the user should make it possible to retrieve information without specifying its source.

The fifth factor is the change that we can expect in user expectations. This will arise from his becoming accustomed to accessing in self-service mode on his home or office screen an increasing range of information from one of our assumed competitors, the Viewdata, or its equivalent names, service.

The last factor, which must act as a limit to the others is that of hard economic constraint. The electronic solution will be successful in replacing existing traditional systems only to the extent that its economic advantages are proven.

The development that now confronts us is, in essence, the substitution, to some extent, of the traditional paper record by the electronic record. This will be accompanied by the replacement of the distribution and storage of paper by telecommunication networks. Information will therefore be accessed as and when required. A possible variant might be to access and to copy records into one's own system for later re-use. We may well ask the question, "Was 1981 not indeed the right year to sell the Times?".

Full text digital storage of documents will undoubtedly increase. Likely candidates for such files are texts of laws, patents, standards and reports as well as the proposed electronic journals. Certain reference works, encyclopaedias and directories will appear in online data bases with the advantage of permanently up to date entries. The new information field of data banks will continue to expand its range of subjects - to name but a few - finance, economics, commodities, demographics, agridata, marketing figures, securities, trade and government statistics. The special skills to learn to retrieve this data and to manipulate and tabulate output according to requirements must be acquired. As the technology advances, new systems will offer improved graphical and eventually pictorial information. How long will it be before we can attach a colour printer to a colour display?

A library or information service may well be judged in the future by the ease with which it can gain access to information rather than by its holdings alone. It is impossible to believe that the skills needed will not increase in complexity. We shall need to operate by knowing of all available sources and by knowing how to tap them.

Some of the future systems mentioned are as yet too nebulous for us to be able to define with precision what their impact will be. However we have not been slow to integrate existing services into current operations. Even if our collections are going to contain decreasing amounts of paper, we will surely continue to incorporate all useful systems into our present and future routines. Soon the large mechanised systems now installed in larger libraries will become available to smaller services. Cheap ready-made "turnkey" services will integrate all our order, cataloguing and loan operations from a single master input record which we shall be able to amend or correct online. We shall probably take this record from one of several online cooperative centralised cataloguing systems. Terminals will operate at the touch of a finger to facilitate access for those with no typing skills. We shall be able to obtain announcements of new material via Viewdata or via one of our current online hosts. Both the British and the US government publications services propose to make their files available in this way and presumably other publishers will follow. If tele-ordering is available then we shall place our orders via a tele-ordering system. Shall we perhaps see the day when some publisher will pick up our order directly? How soon will it be before a file owner will offer access directly rather than via a host? What will happen to national lending libraries if we do all order by telefacsimile? We see conflict of interests on all sides.

I now come to the question of information retrieval techniques. One thing is certain - the retrieval operation will have to become considerably less complex than at present if our role of intermediary is to be dispensed with entirely. The transparency of the services leaves much to be desired and access procedures and languages which are user friendly are only in embryonic state at present. Systems are no better than our own intellectual skills allow them to be. The retrieval complexities of full-text documents in large files have been underestimated. More work on automatic indexing and weighted feed-back will be required to exploit them fully. Advanced user interfaces permitting a natural language approach for the less skilled, or even for all of us, will be needed.

Even when the public accesses its Viewdata services as easily as it now uses the telephone, even when the encyclopaedia, the dictionary, the directory and the newspaper are online at home, the individual will not seek direct access to all world knowledge. He will need and expect

guidance for access to specialised areas in depth. Any service offering assistance with this access will be, and should be seen as, an extension of our own profession. It is here that our skills will be needed, and we shall continue to identify and access these areas for our users. Readers will still reject the screen, like the microfiche, whenever possible. Like the student who, for centuries has covered his standard texts with annotations, the researcher too, likes to pencil notes on his own paper copy. No single individual however will be skilled enough or even interested enough to seek to access all areas of knowledge for himself even if he does become increasingly competent to do so in a particular sub-set which immediately concerns him.

One of the main functions of the librarian or information officer will continue to be the exercise of judgement and selection, to provide skilled guidance to users to enable them to filter the mass of available data and to arrive at a required end product quickly and economically. If we accept the challenge of the new technologies as an increase to our skills, the third wave will not bowl us over - we shall be riding on the crest.

REFERENCES

MANTEN, A.A. A suggested growth model of science and implications for information transfer. Journal of Research Communication Studies, 1, 1978:pp.83-98

BERGER, P.W. Managing revolutions; coping with evolving information technologies. Special Libraries, 71(9) 1980:pp.386-397

CUADRA, C. Surviving the eighties; new roles for publishers, information service organisations and users! NFAIS Newsletter 22(2) 1980

NIELSEN, B. Online bibliographic searching and the deprofessionalization of librarianship. Online Review, 4(3) 1980: pp.215-224

MAHON, B. The potential impact of telecommunication networks on information systems intelligence. Information Processing and Management, 16, 1980: pp. 305-311

TOFFLER, A. The third wave. New York, Morrow, 1980, 544 p.

POSTER SESSIONS AS A NEW VIEWPOINT OF SCIENTIFIC COMMUNICATION
- GENERAL PROBLEMS AND LIBRARY ASPECTS -

Dieter Schmidmaier

Director of library, Mining Academy, Freiberg, German Democratic Republic

1. From the conference around 1900 to the "JET-SET"

Would you, please, imagine yourself together with me in the time around the turn of the century. The few scientists working in one scientific field at that time knew each other - through correspondence, publications and conferences. Then conferences provided possibilities of meeting all those who intended to make important contributions to a certain subject-matter. Conferences rendered it possible to explain latest results in the form of lectures to a small group of listeners, to discuss in the breaks and to renew old acquaintances. Thus it was possible to gain an exact insight into the research findings of others quickly and purposefully - without the separation of event and record. There was not only an understanding among the scientists concerning the subject-matter, but also linguistically, because science was essentially "spoken" and published in only three different languages: English, German, French.

Around the turn of the century the scientist was able to read the relevant literature in the original and to grasp the most important oral information without extraneous help and without a foreign language: he required neither information specialists nor translators, he had his scholar's library, "his" university library and "his" conferences. "This system of the admirably functioning personal contacts, books, academy publications, journals and encyclopaedia was stable: there was no information crisis until 1900."[1] Hence the word "conference", nowadays frequently used in scientific communication, is quite old. The now common form of conferences developed with the scientific societies and academies in the seventeenth century. More detailed information on the first conferences can be found in the catalogue of the library of the University of Cambridge "Union Catalog of Scientific Conference Proceedings 1644 - 1972". So the first conference publication was a report on a meeting of the falconers in 1644[2], preceding the first journal "Journal des Scavans" by 21 years. The conference publications, however, did not develop as quickly as the journals, but a constant increase in the number of conferences could be noticed. The "Union of International Associations" registered 21 conferences between 1815 and 1849; 124 conferences between 1850 and 1870 and 1499 conferences between 1871 and 1900. Thus we have again reached the turn of the century.

From 1900 on, a flood of publications and a language-Babylon are observed. Both phenomena result from the extensive development of science measurable, among other things, by the increasing number of scientists (1 000 scientists in 1800, 100 000 in 1900, 3,2 million in 1970[3]), scientific institutions, libraries, publications and the number of conferences.

The advantages of conferences such as

- actuality of the information obtained
- possibilities of a direct exchange of views

are diminished by

- an increasing number of conferences
- an increasing number of participants at conferences.

Especially since the Second World War, conferences have been held more frequently, modern means of communicaton have made it possible to participate, modern reproduction processes have secured the rapid publication of the conference literature made available while the conference is being held, conferences have become the source of income of important branches of industry such as of the catering trade and tourism, architects include large international conference centres in their planning. The number of conferences held has increased from year to year: from 5 000 in 1958 to 10 000 in 1977. Marathon conferences with several thousand participants and almost a thousand papers are no longer an exception. According to estimates every fourth conference results in a published record.[4] The monthly publication "Index of Conference Proceedings Received" contained more than 14 000 conference proceedings[5]. So you should not be surprised at the words of the great German cabaret artist Werner Finck: "A conference is a meeting where many go in but little comes out". Schröngens suggests that the lecturers indulge in contemplating their own navels and that the listeners suffer from overstrain. [6] The so-called scientific "jet-sets" - scientists flying from one conference to the other - are often criticized in the journals.[7]

If you intend to use the advantages of scientific communication here, too, it is necessary to consider the organisation of scientific conferences once more. The traditional conferences are criticized in two respects:

1. The large-scale meetings shift the communication into the breaks - the talks during the breaks become the rule for the exchange of views.

2. The course of the conference only guarantees the exact reading of highly specialized papers and showing slides which are unreadable from a distance, a discussion does not take place due to lack of time and there is incomplete general control in too large rooms -scientific exchange of information is not possible any longer.

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2. Consideration of an old tradition: the poster

An improvement of the situation can only be achieved if the very intention of a conference - exchange of views, discussion as well direct the conveying and getting of new information - is placed in the foreground and the advantages of scientific communication are thus taken into consideration. Ways of achieving this are, according to the author, the following:

1. more general papers for concentrating knowledge and integrating sciences
2. creating special forms of communication, such as courses of further training for providing knowledge based on the latest scientific results
3. a good combination of oral presentation and adequate visual aids (film, picture, sound, exhibit, experiment)
4. organizing scientific mini-conferences (with the disadvantage of the lack of interdisciplinary meeting)
5. arranging discussion groups between scientists.

In addition to the last item, the so-called "Poster Sessions" represent a promising form creating optimal conditions for the scientific exchange of views.

The concept 'Poster' is, in fact, very old. In the course of time a change of meaning of this English term occurred. According to the conceptions existing in the GDR, 'Poster' is a designation applied to a free, mostly decorative artistic form using display as a means of expression and being published in large editions. The first posters were posters of protest against papacy[8] by Lucas Cranach the elder in the sixteenth century, inspired by Martin Luther. His woodcut "Birth of the Papacy" from 1545 became very famous. Twenty years ago the poster revived together with Pop Art in the USA and with its propagation of wrong idols it was especially intended for the youth in capitalist countries. Nowadays it is a popular form of contemporary art: the reflection of current political and cultural events, the appreciation of progressive personalities of history, a cartoon, a humorous drawing or only a good photo. Posters are often used for decorating rooms or youth clubs. In short: liberal art in the form of the poster - that is the essence of the poster.[9,10]

3. Poster Sessions - Definition, Nature, Preparation, Presentation, Subsequent Analysis

3.1 Definition and Nature

The concept poster is, in a limited sense, also applied to a new form of scientific communication - the Poster Sessions.

The purpose of Poster Sessions is to complete traditional conferences, or even to replace them in exceptional cases. Let us take two definitions by way of explanation:

1. "Authors "post" the diagrams, graphs etc. and a small amount of text on large boards throughout a convenient hall. They stay with their stand for, say, 1 - 1 1/2 hours and

are ready to discuss their work. Those attending can then decide whether they want to just glance at the boards to glean the salient details, or get into detailed discussion. In this way it is fairly easy to get 20 or so papers 'presented' within the time - sometimes it may be possible to leave papers posted for longer periods."[11]

2. "One large meeting room (or more) is filled with bulletin boards on which the participants place graphs, diagrams, data, pictures, and a small amount of text to illustrate the main points of their presentation. The participants then remain with the display for a set period ... to expand on the material and answer questions. Visitors to the session can either wander through as in a museum or go directly to the papers that interest them."[12]

The second definition from 1974 represents one of the first definitions of the concept. The literature on this subject is insufficient and also widely scattered. The main problems in the literature discussion are to be seen, with your permission,

1. in the inadequate presentation of the results
2. in the avoidance of indicating sources of error in the preparation and realization
3. in the insufficient analysis of the general problems and
4. in the leaving out details of subsequent analysis.

The first-ever Poster Sessions were held in Europe, the first one obviously in Switzerland in 1970, as part of the 8th International Congress of Biochemistry. Since 1975 there has been a large increase in their number. With regard to the contents, they especially cover, at present, interdisciplinary and borderland sciences, such as biochemistry, biophysics, and physical medicine but also traditional branches of natural science, such as physics and chemistry, medicine and numerous technical disciplines.

Concluding from all reports between 1970 and 1976, Poster Sessions are a very effective form of the exchange of views at conferences and seem to be the most suitable one to replace the traditional lectures in the monologue form. According to Connie Goldstein, they save "time and space and permit interchange".[13] Robert A. Harte very optimistically calls them [14] "a major mile-stone on the U.S. scene towards the facilitation of personal intercourse between American investigators..." following the example of biochemistry and biomedical science. But he also indicates a decisive disadvantage: "What is lost are the tutorial values to the graduate student... from his making an oral presentation and the exposure of one's work to a sometimes large audience." This remark should be attached great value because educational questions in instruction and further training should by no means be underestimated. A younger author would never gain the experience of presenting a paper to a large audience of his or her peers.

The results of investigations published between 1977 and 1979 confirm these trends, so according to Tamara S. Eisenschitz, et al.[15] Their conclusions read as follows: "The major advantages of poster sessions seem to be as follows... they allow a large number of presentations to be made in a short time; the audience can scan posters and decide which are of interest; the audience can then enter into the sort of close discussion with the demonstrator which is not possible with a conference paper; demonstrators can try out new ideas without possible ridicule; the improved communication due to informality; they are flexible and can quickly alter to cater for e.g. last-minute contributions." In the same context it is stated that the participants of Poster Sessions can learn at their own speed - an idea given too little consideration up to now.

The inquiries (interviews or questionnaires) made by many authors (among others by Robert A. Harte, Thomas H. Maugh, Tamara S. Eisenschitz[16]) or anonymously[17, 18, 19] concerning the value of Poster Sessions can be summed up programmatically in 10 points:

1. more time for dialogues
2. better questions are asked
3. preparation and presentation proceed more smoothly than with conventional conferences
4. browsing is easier
5. the topics meet with a better reception
6. you can learn more and much more easily
7. contents can be grasped quickly and you can decide whether you would like to have a discussion with the contributor
8. experimental details can also be discussed
9. the author can think the matter over while speaking to the audience
10. the costs are more favourable.

3.2. Preparation, Presentation and Subsequent Analysis

According to Robert A. Harte[20], scientists expressed the opinion that they must work harder, but come away more rewarded than after giving a normal talk. In the report of Tamara S. Eisenschitz et al.[21], scientists regarded papers presented at Poster Sessions as inferior to published journal papers or papers presented at a conventional conference, because there is no publication of poster displays. Between these two views there is a broad range of issues.

Certain technical and organisational guidelines are necessary for the preparation. Such can be found in the appendix of the contribution for a Poster Session (1975) by Robert A. Harte[22]. Generalizing the experience of Tamara S. Eisenschitz et al.[23], Connie Goldstein[24] and my own observations the following points result:

1. Poster displays should always appear in the official conference programme. Abstracts scheduled for presentation in Poster Sessions will be grouped by topic, numbered and listed in the programme, and published in the same abstract book together with traditional contributions.
2. The conference programme should contain assignments of the exact places and times (where the poster presentation may be expected and when a corresponding introduction and/or discussion will take place).
3. The hall hired must be large and clearly arranged, while such aspects as acoustics, illumination and ventilation need not reach optimum values. It is also possible to place the Poster Session in a traffic-flow pattern[25] (session in a hotel: the participants move through the hotel and realize they can attend a paper being presented in the traditional format and still not miss interesting poster session papers).
4. Each author should get certain standards, for example:

4.1 Fibreboards of a uniform size should be assigned to the authors in the required numbers. The poster board surface area is 1.2 x 1.2 m and the distance to the floor should be 1.0 to 1.2 m. Uniformly large space in the upper part of the poster boards should be kept free for the programme number, title of the contribution and author (the lettering for this section should be at least 25 mm high, the typography must be easily readable).

4.2 The poster contribution must be an effective combination of displays (pictures, diagrams, graphs, drawings, etc.) and text with a sharp black-and-white contrast.

4.3 The illustrations must be made beforehand; they must still be easy to read from a distance of 1.2 m. The recognizability of the displays depends on letter- and letter size, letter- and letter thickness, type fact, composition of colours, distance between poster and viewer, arrangement of the material, as well illumination. The illustrations should be cruder than, for example, those used in making slides, but they should not be "arty".

4.4 Only a small amount of text should be used. It should be typewritten.

5. Blackboards (with chalk and cloth) should be available for discussion, so that you need not write or draw on the poster boards. It is also possible to fix a transparent foil on the poster board and use a felt marking pen for further explanations and additions.
6. "Poster Assistants", who may give technical assistance and contribute to a successful presentation, should be there for the Poster Session itself.
7. Written aids for studying the problems displayed on the posters are a means for supporting the discussions considerably.
8. The technico-organisational instructions given by A.J.MacGregor[26] should be given consideration. He published, for instance, a simple method for preparing poster talks by a threefold enlargement of a typewritten copy of a special letter. Enlargements are easy to read from a distance of 2.5 m, the titles of the poster displays are readable even from about 5 m. Hand lettered material should contain appropriately heavy lettering, at least 10 mm high.

9. In the preparing and running of Poster Sessions the authors should proceed according to certain fundamental rules. Up to now all statements related to it differ very much, and experience is insufficient. The "Guidelines for participants" presented by Connie Goldstein[27] should be regarded as introductory.

It is safe to say that well prepared Poster Sessions will be very successful. There are many examples: the Biochemistry/Biophysics Meeting (Minneapolis 1974) cosponsored by the American Society of Biological Chemists and the American Biophysical Society; the conference of the Institute of Information Scientists (London 1978, the whole conference was run in the form of a Poster Session), the conference of the American Physical Society (Atlanta 1976, as Poster Session only), the X. Conference of Metallurgical Materials Testing (Balatonaliga 1979, with 7.75 hours plenary papers, 2 hours round-table talks and 8 hours poster talks), single colloquies of the Mining and Metallurgical Conference of the Mining Academy (Freiberg 1979 and 1980), the symposium of the International Association of Asthmology (Oberhof 1980, with 24 main talks, 40 abstracts and 40 poster talks), the first joint symposium of Biochemistry GDR- Czechoslovakia (Reinhardsbrunn 1980)... etc. In the GDR great efforts are successfully being made to promote Poster Sessions and at the same time contribute to the clarification and definition of the concept and contents of Poster Sessions.

The costs are by no means higher than at conventional meetings. On the contrary, the total costs for audio-visual aids - poster boards, pinning materials, blackboard rent, rent for the hall hired and wages for the poster assistant, are even lower, all the more so as the quality of the halls need not be the best one.

There are no statements as to the subsequent analysis. There are only some indications in the abstract by Tamara S. Eisenschitz et al.[28] concerning the really decisive disadvantages of Poster Sessions - the lack of conference proceedings. And it is here that the starting point of the librarian is to be found, since libraries are again and again faced with requests concerning conferences. Conference publications, indeed, are very important primary sources of information. To find them, to acquire and store them, but also to register them biographically, are primarily tasks of all kinds of libraries.

Hence poster talks have proved successful in the last 5 - 7 years. Their advantages touch modern aspects of scientific communication: they are concise, illustrative and clear.

4. Conference Publications - Without Poster Sessions?

If librarians are asked which sources of information are difficult to deal with, they will mention above all the conference publications.

Conference publications are difficult to find and to acquire. It happens very seldom that they are offered in the form of books by the book trade. The irregularities of the bibliographic data create a certain confusion. The proceedings are published under the topic of the conference or the name of the author or the title of a committee in a quite disorganized way, whereby the preprints reproduced by simple means make it even more difficult (but sometimes just these preprints are the only complete publication of a conference). The different synonyms for the word 'conference' raise difficulties too: congress, colloquy, convention, course, discussion, gathering, hearing, meeting, round table, seminar, session, symposium, working group and workshop, and there are also different terms for the results of the conference: abstracts, communications, papers, preprints, prints, proceedings, records, reports, transactions - 23 different terms in the English language only!

Besides the book, which is the exceptional form for publishing the results of a conference, it is not possible to find one term being frequently used for the other forms: research reports, publications in periodicals, offprints, abstracts on one sheet of paper, microfiches, tape-recorder cassettes, even slides and single tables and diagrams and, of course, posters.

If publishing houses and bookshops are not responsible for the circulation of conference publications, the acquisition of such material becomes difficult anyhow; permanent addresses for conferences exist only in exceptional cases.

And what about the future? When conference publications are considered under different aspects, the general view is very diverse: their identification, their finding and their standardization are difficult, their informative value is controversial, their price is not seldom very high. The great international organisations such as IFLA and UNESCO seem to be unable to sum up and collect all conference publications (not to mention the unpublished results).[29] Only a registration on a national base (host country) is possible. Thus a centralized national catalogue of conferences and their publications develops. The national libraries and central special libraries are becoming adequate depots with the duty of bibliographic registration. Interesting investigations have been carried out on this subject-matter.[29, 30, 31, 32] They should be completed by the hint that also posters can be the result of conferences and that they, too, must be included in the policy of acquisition and access at the library. Poster talks should be regarded as a further form of conference publication, even if it is not always a typical one.

5. Poster Sessions And The Librarian

From the statements in the third and fourth sections, it follows that the problems of acquiring, making accessible, storing and informing about the results of Poster Sessions

as part of the conference results have not yet been, or not been sufficiently, settled. It is also an attractive investigation whether and in which way librarians may complete or replace their own conferences by Poster Sessions.

Considering the variety of problems mentioned first the most important requirements will be summarized in the form of postulations:

1. The librarian must recognize that conference publications are an important primary source of information available mostly as non-book-material, and that this especially applies to poster contributions.

2. The librarian must exert an influence on the preparation of conferences by his institution, as well as concerning technical, organizational and methodical questions. This also concerns the contributions to Poster Sessions. A uniform presentation of posters at several conferences, at first in the national and later in the international sphere, too, would at least facilitate the keeping of archives and supplying of posters by libraries.

3. The librarian should be a member of the preparatory committee of conferences to be able to pass on his experience, especially for the preparation and circulation of conference publications. Proceeding from the recommendations of the IFLA, IATUL, ISO and other organisations, he can exercise a direct influence on the conference publications. In this sense the same applies to the new form of poster presentations.

4. The librarian must take over the tasks of storing, supplying, and bibliographical registering of conference publications - including posters. He must inform the organiser and ask him to make a note on all official invitations and programmes indicating that the conference documents are kept in the archives of the library and are available to the user. Thus the acquisition becomes easier and the change-over to the duty copy is almost accomplished.

5. The librarian must open up the conference publications according to internationally binding rules (e.g. ISO 690) - the same applies to poster contributions. Certainly some difficulties will result because posters are typical forms.

6. The librarian should put through internationally uniform regulations for keeping conference publications in the form of non-book-material - the main effort should be concentrated on poster contributions. In this connection, it should be investigated whether, in the case of material that is not published, the original is to be kept (e.g. manuscripts of papers and poster contributions). If you have decided to store it, it must be examined whether it is possible to keep posters of an acceptable format

horizontally like maps in steel-cabinets with drawers, or whether microfiches are technically feasible and more suitable.

7. The librarian must put through the rule that poster contributions are to be published in the same way as all the other conference proceedings and must prevent an underestimation of them in the interests of providing knowledge.

8. The librarian is obliged to do a great deal of extensive bibliogaphic work to distribute the results of the conference as quickly as possible. He is responsible for propagating conference publications.

The acquisition, identification, and storage of the results of Poster Sessions in scientific and technical disciplines, as well as information about them, are within the interesting scope of activities of the IATUL.

Finally, some ideas about running Poster Sessions in librarianship. Library science belongs to the social sciences. Consequently, there are less possibilities of representation than in scientific-technological disciplines. In the last ten years, however, librarians have learned to apply and adapt knowledge from other branches of science more effectively (computer science, mathematics, civil engineering etc.). This also encourages the application of Poster Sessions in order to rationalize scientific communication because library conferences are also increasing in number and participants.

The IATUL represents the interests of a growing number of technical libraries in the world and can contribute to popularizing Poster Sessions and scientific posters as non-book-material.

As examples should be mentioned:

1. Cooperation between libraries: The increasing importance of cooperation and coordination in library work also demands audio-visual and display methods of representation.
2. Electronic data-processing in libraries: The application of computers in library and information work provides an almost ideal basis for Poster Sessions as the necessary description of processes can be displayed schematically.
3. Library pedagogics: A great part of the pedagogical work of the librarians can also be dealt with by Poster Sessions. The graphic representation is particularly successful in online-user-education, for statistical data concerning methods and instructions, as well as an audio-visual aid.
4. Library buildings: The library building especially invites the running of Poster Sessions for the description of buildings, equipment and ground-plans, as well as for comparable indices and projects.

5. Bibliometrics: The application of mathematical methods in library science and bibliography is an excellent subject of representation for scientific posters.

In 1813 Ploquet wrote: "Our life is so short and there are so many books."[33] Should the IATUL change this statement to suit 1980 and say: "Our life is so short and there are already so many conference publications - and now even posters"?

References.

1. ARNTZ, H. Wege der Informationsdeckung. In: Information und Gesellschaft. Stuttgart, Frankfurt 1977, p. 114.

2. DÁCZER, E. Újabb fejlemények a kongresszusi kiadványok körül. (New developments concerning conference proceedings, hung.) Tudományos és Müszaki Táje koztatás, 27(10) 1980, p. 401.

3. MIKHAILOV, A.J. Scientific and technical information and effectivness of science. Riv. Inform., Roma, 3(1) 1972, p. 74-77.

4. GARFIELD, E. ISI's new Index to Scientific and Technical Proceedings. Current Contents. Engineering Technology and Applied Science, 5(40) 1977, p. 5-10.

5. ATKIN, P., P. SEED: The acquisition of conference proceedings at the British Library Lending Division. Interlending Review, 7(2) 1979, p. 47-51.

6. WEISS, P. Medizinische Wissenschaftsinformation, Berlin 1980, p. 22.

7. DÁCZER, E. p. 401.

8. KUNZLE, D. Posters of Protest. Art News, 70(10) 1972, p. 51-55, 61-64.

9. RADEMACHER, H. Das Poster - freie Kunst im Gewande des Plakats. Bildende Kunst, (3) 1978, p. 111-112.

10. PURDAY, N., D. HOCKLEY: Posters and the environment. The Planner, 62(6) 1976, p. 172-173.

11. Poster sessions. Physics Bulletin, (Aug.) 1976, p. 335.

12. MAUGH, T.H. Poster Sessions: A new look at scientific meetings. Science, 184 (28 June) 1974, p. 1361.

13. GOLDSTEIN, C. How, when, why to run POSTER SESSIONS. Successfull Meetings, (Aug.) 1976, p. 48.

14. HARTE, R.A. Poster Sessions: a better way to communicate. Federation Proceedings, 33 1974, p. 2087-2088.

15. EISENSCHITZ, T.S. et al. Poster Sessions as a medium of scientific communication. J. Research Communication Studies, 1 1978/79, p. 240.

16. HARTE, R.A. p. 2087. - MAUGH, T.H. p. 1361. - EISENSCHITZ, T.S. et al. p. 238-240.

17. Display method a hit at scientific meeting. Chemical and Eng. News, 1 (July) 1974, p. 14.

18. Poster Sessions get warm welcome in Atlanta. Physics today, (June) 1976, p. 75.

19. Poster Sessions at ASIS-75: A better way to communicate. Bulletin Amer. Soc. Inf. Science, 1 (6) 1975, p. 28.

20. HARTE, R. A. p. 2087.

21. EISENSCHITZ, T. S. et al. p. 241.

22. HARTE, R. A. p. 2088.

23. EISENSCHITZ, t. S. et al. p. 238.

24. GOLDSTEIN, C. P. 50.

25. Poster sessions get warm welcome in Atlanta. p. 75.

26. MACGREGOR, A.J. Preparing Poster talks. IEEE Transactions on professional communication, PC-21 (3) 1978, p. 103-105.

27. GOLDSTEIN, C. p. 49.

28. EISENSCHITZ, T.S. et al. p. 239.

29. DÁCZER, E. p. 404-408.

30. DRUBRA, H. Conference documentation: General overview and survey of the present position. International Associations, 28 (8-9) 1976, p. 383-387.

31. SYMES, L. Conference proceedings and the special library. Australian Special Libraries New, 11 (3) 1978, p. 93-96.

32. MANTEN, A.A. Scientific congress publications. International Associations, 28 (10) 1976, p. 438-443.

33. COOLEY, S.G.E. Medical bibliography and MEDLARS. Plast. Reconstruct. Surg. 40 (2) 1967, p. 116.

MINI POSTER

Dieter Schmidmaier

POSTER SESSIONS AS A NEW VIEWPOINT OF SCIENTIFIC COMMUNICATION

- GENERAL PROBLEMS AND LIBRARY ASPECTS -

POSTER SESSIONS IN THE LIBRARIAN-SHIP

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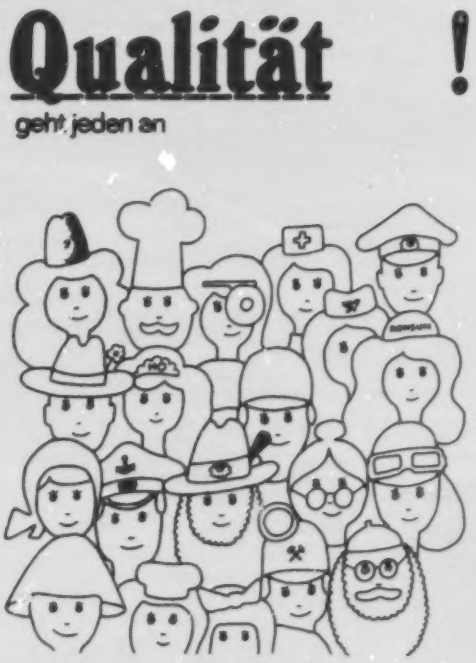
For 9th I A T U L Conference Lausanne 1981

IATUL Lausanne 1981	POSTER Number 1	Dr. Dieter Schmidmaier DDR - 9200 Freiberg/Saxony Mining Academy

POSTER SESSIONS AS A NEW VIEWPOINT OF SCIENTIFIC COMMUNICATION - GENERAL PROBLEMS AND LIBRARY ASPECTS -



POSTER SESSIONS have made their way into scientific communication.

Scientific events (called conferences for short) are special ways of communication. The advantages of such conferences are the actuality of the information given and the possibility of an immediate exchange of ideas.

The development of the last 10 years shows

an increase in the number of conferences and
an increase in the number of participants of conferences.

This results in an decrease of the advantages.

An alternative to it are POSTER SESSIONS. They have become popular as a medium of scientific communication. POSTER SESSIONS are a very productive form of the exchange of opinious. Concise theses, definitions and examples derived from the subjects of plenary sessions are displayed on boards by means of posters. In front of these the interested participants of the conference may meet to an informal discussion.

In the true sense the word POSTER designates a free, mostly decorative artistic form using displaying means of expression and being published in large editions.

POSTERS are already found in feudalism (e.g. Martin Luther and Lucas Cranach with an antipapal cartoon "Birth of the Papacy", 1545). Today they represent a popular branch of art and are frequently used for different decorating purposes, e.g. in rooms.

Conference materials produced in preparing and conducting conferences are particulary important sources of information. The libraries preserve these conference materials and inform on them. They are mostly published in paperform as books, articles in journals or preprints and less frequently in microform. Their quantity is rising constantly.

Today POSTER SESSIONS introduce new conceptions into the work of the libraries - the scientific posters - and in connection with it new problems of production, acquisition, cataloging, storage are arising. With regard to the great significance of POSTER SESSIONS the solution of the following problems results:

- popularizing Poster Sessions in library science with the aim to establish scientific posters as form of the Non-Book-Material
- proposals for dealing with scientific posters in libraries
- carrying out Poster Sessions in selected disciplines of library science as a contribution to rationalizing national and international conferences.

! See: POSTER Number 2 !

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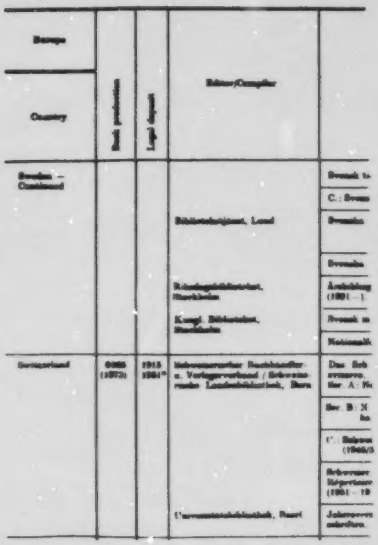
IATUL Lausanne 1981	POSTER Number 2	Dr. Dieter Schmidmaier DDR - 9200 Freiberg / Saxony Mining Academy

POSTER SESSIONS IN THE LIBRARIANSHIP

Library science is a social science. Consequently there are less possibilities of representation than in scientific-technological disciplines. In the last ten years, however, librarians have learned to apply and adapt knowledge from other branches of science more effectively (computer science, mathematics, civil engineering etc.).

This also encourages the application of Poster Sessions in order to rationalize scientific communication because also library conferences are increasing in number and participants.

The IATUL represents the interests of a great potential of technical libraries in the world and can contribute to popularizing Poster Sessions and scientific posters as Non-Book-Material.



An excellent preparatory work to the Poster Sessions are already available displays and tables. A good example are the outstanding Synoptic Tables concerning the current National Bibliographies. Comp. G. Pomaßl. Berlin, Leipzig 1975. Detail, p. 20.

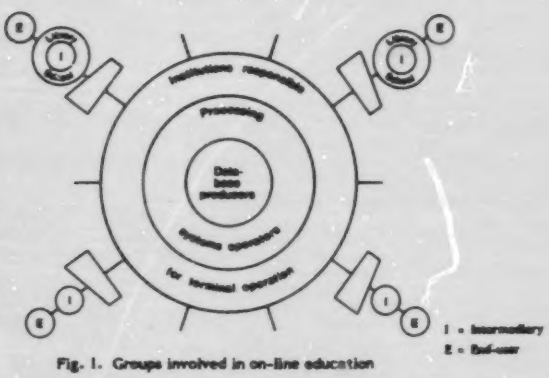


Fig. 1. Groups involved in on-line education

LIBRARY PEDAGOGICS - A great part of library pedagogics can also be dealt with by Poster Sessions. The graphic representation is particularly successful the online user education, for statistical data concerning methods and instructions as well as for audiovisual means (N. Fjällbrant/IATUL - Proc.12. 1980,p.57.)

LIBRARY BUILDINGS - The library building especiall challenges to carrying out Poster Sessions by the de scription of buildings, equipment and ground-plans as well as by comparable indices and projects (design of the new library building of the Mining Academy of Freiberg / GDR. 1980.)

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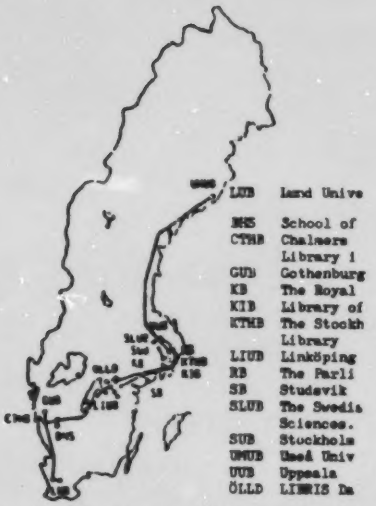

Fig. 2 LIBRIS data communication network

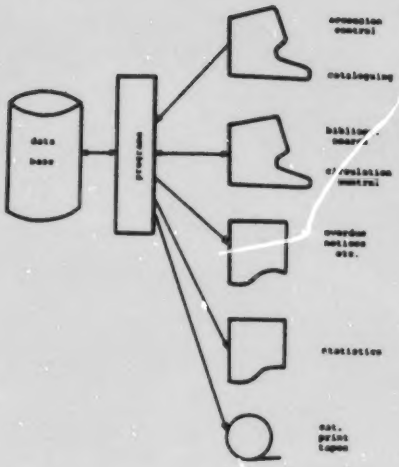

Fig. 3

COOPERATION BETWEEN LIBRARIES - The increasing importance of cooperation and coordination of library work also demands audio-visual and displaying methods of representation (L. Gärdvall/8th Meeting IATUL 1979. p. 64.)

COMPUTERS IN LIBRARIES - The application of computers in library and information work provides an almost ideal basis for Poster Sessions by the necessary description of processes in the form of schemes (B. Barnholdt/5th Meeting IATUL 1973, p. 66.)

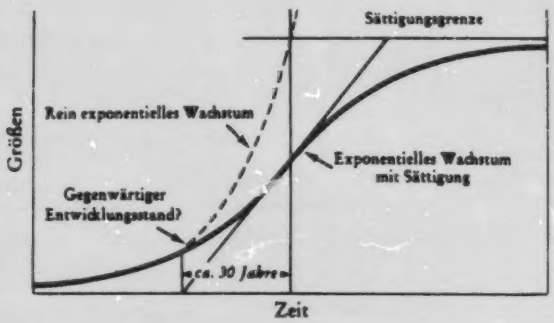

Abb.11: Allgemeine Form der logistischen Kurve

BIBLIOMETRICS - The application of methematical methods in library science and bibliography is an excellent subject of representation for scientific posters (A. Diemer / Scientometrie und Bibliometrie. Bielefeld 1976. p. 48.)

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Göteborg, October 4, 1981

SOME PROBLEMS AND PROPOSALS FOR COMMUNICATION IN MECHANICAL ENGINEERING

V. Jarc

University Edvard Kardelj, Ljubljana, Faculty for Mechanical Engineering,
Specialised INDOK Center for Mechanical Engineering, Yugoslavia

1. The Information Flow

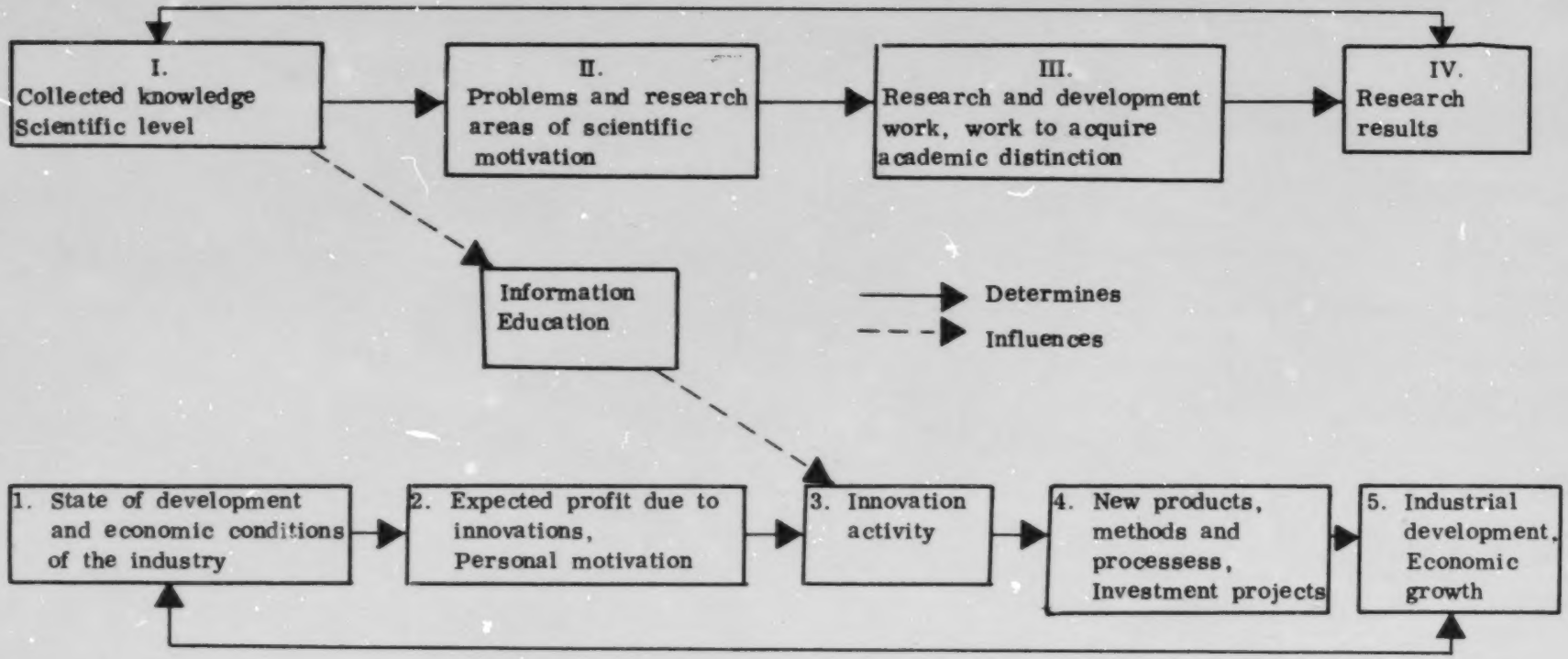
The information-communication flow model, published by Erik A. Haeffner in the year 1973, is one of the foundation stones of the modern look on the innovation process (fig. 1)[1]. The information flow between scientific level and the level responsible for industrial development and economic growth could be provided only if the following three conditions are dominating :

- the absorption willingness of the user,
- the integrated information transfer provided by higher education, consulting, and scientific technical information activity,
- the delivery awareness of the scientific level.

All these conditions are normally much more a result of human communication ability than a result of technical and economic growth (fig. 2).

I know a number of scientists on the highest scientific level, who are very active in research, however, they are simply not able to communicate their know ledge to others. I know a lot of libraries with the following working concept : we have a lot of books, periodicals etc., come and you will get all the information you need, and more. And I know a lot of endusers who are simply not able to define their problems and therefore never get the correct and/or complete information.

The awareness of information value on the whole is sometimes not on a very high level, especially the awareness for the long chain of information transfer. For sure it is not sufficient compared with the intuitive step-taking of decision



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A model for technical progress and economic growth. The activity across the top of the model represents scientific research, the activity across the bottom represents development in industry.

Research has one primary effect: it increases the body of available knowledge, and this knowledge affects innovation. The impetus to innovation, however, is the state of the industry, and the industry´s expectation of profit arising from the effort. In the illustration at the right, "innovation activity" (box 3 above) is further dissected.

Fig. 1, Haffner´s Model

processes [2].

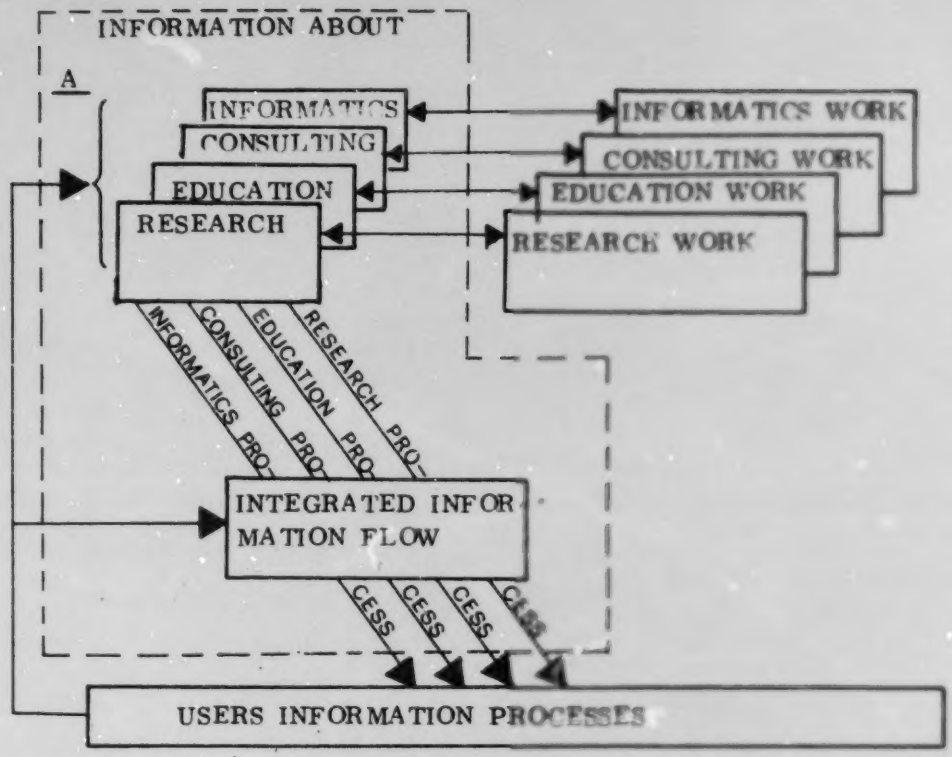

Fig. 2 Integrated information flow

2. Information Systems and Databases

Different fields of science and technology have solved their information needs differently. One of the best covered fields is without doubt the chemical engineering with databases produced by the Chemical Abstract Service and others where the yearly quotation of c. 500.000 items on databases CA CONDENSATES, CA SEARCH, CHEMICAL INDUSTRY NOTES, CA PATENT CONCORDANCE, CLAIMS etc. really represent the chemical field.

A very high level was achieved by the IEEE with database INSPEC in the field of electrical engineering, where 120.000 items a year offer a good physics and electronics chance to information seekers.

Mechanical Engineering is represented by the following databases :

- ISMEC
- MECHEN
- SAIDC - ST
- COMPENDEX (engineering index) - a technical database comprising among other the mechanical engineering

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- DOMA - Dokumentation Maschinenbau (was not analysed because we could not recieve detailed information in time).

Some details of mentioned databases :

ISMEC

Produced by Data Courier, Inc., Loiswille, KY, USA, founded 1973, about 100.000 citations, English translation of titles, English indexed, bibliographic data. 250 journals scanned, prevailingly English based, reports, books, conference papers.

MECHEN

Produced by Royal Institute of Technology Library, IDC, Stockholm, Sweden, founded 1968, about 400.000 citations; original title, nonindexed, bibliographic data. 157 journals scanned, prevailingly European origin.

SAIDC-ST

Produced by Faculty for Mechanical Engineering, Ljubljana, Yugoslavia, founded 1976, about 16.000 citations, original title, bibliographic data, Slovene - indexed (in preparation English version of key-words). 145 journals scanned, prevailingly nonenglish, dissertations, postgraduate materials, books, conference papers.

DOMA

Produced by Gesellschaft zur Literaturinformation des Maschinenbaus G.m.b.H Frankfurt/Main, founded ? , about 300.000 citations, bibliographic data, German indexed.

COMPENDEX

Produced by Engineering Index, Inc., New York, NY, USA, founded 1970, about 800.000 citations, English translation of titles, abstract, bibliographic data, some indexes; whole technical field where about 15 % represent the mechanical engineering ; 3500 journals, proceeding papers, reports, books.

The overlapping of the treated journals :

DATABASE	COMPENDEX	ISMEC	MECHEN	SAIDC-ST
COMPENDEX	3500		74	40
ISMEC		250	26	14
MECHEN	74	26	157	23
SAIDC-ST	40	14	23	145

On-line availability (spinners) :

ISMEC : Lockheed DIALOG, ESA-IRS, SDC-Orbit

MECHEN : MEDICINDATA, GOETEBORG, SWEDEN

SAIDC-ST : Republiški računski center, Ljubljana, Yugoslavia (RRC)

COMPENDEX : Lockheed DIALOG

DOMA :

Telecommunications access :

L-DIALOG, SDC-Orbit, ESA-IRS, Tymnet/Telenet

ESA-IRS : own network EUROPE

ESA, IRS : EURONET

RRC : own private network in Yugoslavia

DOMA :

3. Difficulties at the Usage of Databases

All mentioned databases have different structures considering sources, treatment of data languages. Nearly all of the databases mentioned were founded to serve the national users. Nearly all of them have started from libraries which already served the users´needs with a spectrum of journals, books, conference papers, etc., and the scientific publications of domestic origin : dissertations, research works, etc. By such asynchronised development of the databases in mechanical engineering it is almost impossible to exchange machinereadable information. So it is practically impossible to get an integrated broad information overview - as it is possible, for example, in chemical engineering.

4. Proposals of Collaboration and Communication

Such a messy information field in mechanical engineering makes a lot of difficulties to the enduser and to the information dealers. Only a good, broad, coordinated and integrated information pool can be of use for all kinds of users. And that has to be the first goal of all information dealers [3]. To meet that goal the following steps could be suggested :

a/ standardisation of the format of data for all databases in mechanical engineering in such a way that it would be possible to facilitate simpler joint computerised services,

b/ to coordinate subject coverage among database producers and so to improve the overall content and quality of information,

c/ to exchange other information on databases, especially promotion ideas,

d/ to strive towards coordinated planning with regard to marketing and sales facilities, especially on-line spinners, with the aim to provide users with complete and coordinated on-line services.

Such a common database colud have several advantages :

- the cost for producing and maintenance are lower,
- the joint databases could reach about 100.000 records a year,
- the collaboration and communication between the information producers could be better,
- the user could get a much more representative information on better conditions.

5. Conclusion

Only a good international cooperation and communication can cover all information needs of our users. And all activities which are covering the users´needs in getting information and information producers´ needs to transmit the information have to be developed in such a way as to achieve these goals. The modern trends make this way more and more complicated because they are not enough coordinated, but on the other hand, the communication is with the same development faster and faster. So the development of our systems, for which we are responsible, have to be developed in the same way.

References :

1. HAEFNER, A.Erik: The Innovation Process. Technology Review, March/April, 1973, p. 8.

2. JARC, Valentin : Inovacijski proces (The Innovation Process) - a contribubution for the Chamber of Economy of SR Slovenia, session on 81-2-27, Ljubljana (Slovene).

3. JARC, Valentin : Stanje i razvoj informaciono-dokumentacione delatnosti u SFRJ, (State and development of information and documentation policy in the SFR Yugoslavia), MAŠINDOK 80 - Congress for mechanical informatics in Yugoslavia, Ljubljana, March 1980; (Serbo-Croatian); sponsored by Faculty for Mechanical Engineering Ljubljana, Yugoslavia.

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COMMUNICATING SCIENTIFIC INFORMATION THROUGH A UNIVERSITY LIBRARY NETWORK

Dennis Shaw

Keeper of Scientific Books, Radcliffe Science Library,
University of Oxford, U.K.

1. Introduction

Besides the widely accepted connotation of primary and secondary sources of scientific information it is postulated that a tertiary source may be identified. These three categories are related to the pursuit of fundamental research at the frontier of knowledge, the assimilation of the established discoveries into the traditional body of scientific literature and archiving for posterity.

It is not possible completely to separate these categories nor to identify distinct media responsible for the corresponding information transfer and storage. However, we can identify a hierarchy of media and each element within the hierarchy can be defined. In Oxford, printed materials are categorized thus: books, periodical parts, pamphlets (bound), sheets and photographic material. All of these elements have provided media for scientific communication, but there are others of importance, viz: (i) private communication in manuscript form, (ii) other 'unpublished' material, e.g. preprints and conference abstracts, (iii) unwritten communications of which the most important are private conversation, unpublished conferences and colloquia and (iv) electronic databanks and machine-readable files.

The university library system represents a substantial academic investment yet it contributes very little to the support of the primary category of communication. In Oxford, (as elsewhere) science departmental libraries assist in the distribution and collection of ephemera but this is not an exclusive activity.

The 'electronic journal', whose inception was heralded as marking the eventual replacement for the printed scientific journal extant since 1665, has not so far found many supporters; but experiments continue. Computer-based information networks are now evolving commercially as well as privately and libraries are participating in this latest method for communicating information. This paper considers what effect such developments may have on the future role of university libraries.

2. Research Libraries in Universities

The Radcliffe Science Library is the centre of a network of fifty libraries serving the needs of scientists in the University of Oxford. The composition and characteristics of this group of libraries were described at the 8th IATUL Conference at Enschede in 1979[1]. It was explained there

that the system supported the teaching of more than 5,000 undergraduate and graduate students of natural science, mathematics, medicine and technology. However, the main purpose of the majority of these libraries in Oxford is to support the research activities of 1,300 academic and post-doctoral research staff based in the departments. All of these libraries are frequently called 'research' libraries, a description first applied in North America in 1889 [2]. The extent to which this description is valid is one of the issues raised by this discussion.

For a library to contribute significantly to research it must participate in the communication of information relating to that research. The first and most obvious method of participation is through the provision of the core (or primary) literature of which the scientific journal is the major constituent. However, the research scientist would be very unwise to rely on this as a first source of information on contemporary developments in his field in view of the long time period between submission of a manuscript and its publication. Average values for this time period for a random selection of journals are presented in Table 1. It will be noted that average delays range from 3 to 18 months. The publication of letters which was accelerated when the specialist 'Letters' journals were introduced in 1958 has contributed to speedier communication but it has not enabled a satisfactorily short period to be achieved between submission and publication.

It is concluded that the publication of results in a hard-copy primary journal is not generally chosen as the means for the first communication of important new scientific results to other workers in the same or closely related fields. Having participated in fundamental research in nuclear physics and experimental high energy physics, the author knows this to be true from his own experience. Information from discussions with scientists working in other fundamental fields of research, e.g. biochemistry, solid state physics, quantum chemistry and molecular biology, to mention a few disciplines only, lends support to this thesis.

3. Primary publications

The discussion leads naturally to two important questions, viz:

(1) What is the function of a primary scientific journal? and

(2) What are the preferred methods for the rapid communication of research results?

Since the purchase and display of primary scientific journals is such a prominent activity in scientific research libraries, their significance is clearly of major relevance to our theme. This has been studied by a number of scientists and others[3] including Meadows in 'Communication in Science'[4]. The core journals clearly provide the major authoritative source for established scientific discoveries. As such they are important to the author and the student. To the former they provide the basis for his scientific reputation which is determined by the regard held by his peers for his published work. The original papers in these journals provide the main source of references which will be cited by (a) others in reporting related work as well as (b) by writers of review articles in the secondary literature and (c) textbook authors. Their use in (b) and (c) shows the relevance of these periodical papers to the student. In some rapidly developing fields, e.g. biochemistry and genetic engineering, the original paper constitutes an important source of information for the student since textbooks in such fields are out of date virtually as soon as they are published. These scientific

TABLE 1. Average time delay between submission and publication in a random selection of journals of science and technology in 1980.

Journal	Country of Origin	Time delay	
		Range (months)	Average (months)
International Journal of Electronics	UK	2 to 4	3.0
Colloid and Polymer Science	FDR	2 to 4	3.3
Physics Letters	Netherlands	2 to 11	4.1
Physical Review Letters	USA	2 to 11	4.3
Nature - London	UK	2 to 7	4.4
Cancer Treatment Reports	USA	2 to 9	5.5
Organic Mass Spectrometry	UK	4 to 9	5.8
Journal de Chimie Physique et de Physico Chimie Biologique	France	4 to 20	7.7
Journal of Pediatric Surgery	USA	-	8
Journal of the Geological Society of London	UK	5 to 14	8.3
Indian Journal of Pure and Applied Mathematics	India	7 to 14	8.4
Solid State Electronics	UK	6 to 16	11
Hydrometallurgy	Netherlands	8 to 14	11
Tetrahedron	UK	9 to 18	12
Journal of Applied Mechanics and Technical Physics	USA	6 to 28	12.5
Flora - Jena	DDR	16 to 20	18

papers provide also the basis for the claim of an individual scientist to an original contribution to knowledge. However, many a scientist has put pen to paper to record his discovery only to find that someone else has just published the results of a similar piece of research.

4. Preprints and Ephemera

Speed of publication of original results is of paramount importance and the problem of delay has created the need in highly competitive fields of research for other media for the primary announcement of results. Weekly scientific magazines such as 'Nature' served this purpose for a long while and the 'Letters' journals also contribute to a solution of this problem; but these publications do not provide a completely satisfactory system (as is shown in Table 1). As a consequence we have seen the evolution of the preprint which is printed (or duplicated from typescript) by the author to distribute privately to his friends and competitors in research laboratories and institutions where similar work is in progress. Such publications are the major component of the ephemera of the scientific community which includes also conference abstracts and research reports. Some research libraries collect and distribute these ephemera and in many of them this is a significant activity. It greatly increases the amount of 'grey' literature in circulation.

5. Sources of Research Information

Learned scientific societies have several times sought the views of their members on the means for the better dissemination of the results of scientific research. As a result of these (and other) studies it has been emphasized that the conventional scientific periodical is only one of many media for scientific communication. An analysis published by the American Institute of Physics in 1970[5] identified the major sources of information used by physicists and gave quantified estimates of their relative importance (see Table 2).

TABLE 2. Relative importance of different sources of information

Source of information	Relative importance
Archival literature	1.0
Personal contacts	0.8
Papers at meetings	0.6
Non-archival literature	0.6
Abstract journals	0.4
All other sources	0.1

The numerical data in Table 2 must be somewhat subjective but they serve to show the importance of ephemera and non-archival publications. Furthermore, when various methods of acquiring information were ranked in order unpublished material obtained from colleagues as well as private correspondence were considered to be as important as the use of abstract journals to obtain references and more important than using textbooks or subject bibliographies. Our experience in the Radcliffe Science Library has shown that the conventional sources of information available in libraries (i.e. archival literature) are used much more by the medical and biological scientists than by the physical scientists. A rank order for the importance of this archival literature

among scientists using this Library is given in Table 3. The relative ranking for physics and chemistry has been confirmed to be generally true in North America.[5]

These studies were completed before the electronic database became widely available.

TABLE 3. Importance of archival literature in the Radcliffe Science Library to those seeking scientific information for research

Order of importance	Subject
1	Clinical Medicine
2	Biological Sciences
3	Engineering Sciences
4	Chemistry
5	Physics

6. A Data-Communications Network

It was reported at Enschede in 1979 that there were plans for a hard-wired communications network connecting the Oxford Science departments to the central University Computing Service to be used for on-line computing and information transfer. This has now been realized but the information transfer is currently limited to messages and bulletins relating to the computing service itself. However, an extension to other types of information is under active consideration and one of the likely databases to be set up for on-line access is the union list of science periodicals. Before extending the network to carry other scientific information studies are being conducted to determine the likely traffic and the cost-effectiveness of such a system (see §10 below).

7. Electronic Databases

The use of electronic storage of information for selected scientific data has been growing steadily over the past decade. However, the extension of this method of storage has been slower than many futurists predicted, particularly in Europe. The reason for the slow growth is the high cost of establishing the database initially in machine-readable form. Consequently, a viable system operating commercially without hidden subsidy must have a high level of usage. The proportion of the characters (or words) stored in the average library which is accessed annually (say) is very low, probably well below 1%. Therefore, to make an electronic storage and retrieval system cost-effective using currently available methods for data input, either the database must be highly selective or the charges for information retrieval must be set very high.

Market forces have thus far restricted developments to those fields in which there is a high activity, e.g. contemporary commercial information, ready reference data and important indexes. This restriction is likely to last until the next generation of cheap mass storage is available for wide distribution. Provided the Western economy does not collapse, the time for this is not far ahead. In the meantime, urgent consideration needs to be given to faster and cheaper methods for generating machine-readable storage from existing records.

8. The Electronic Journal

Two recent examples serve to illustrate other present problems. The first of these is shown by the electronic journal which has been described in four different forms[6] viz: (i) an informal newsletter, (ii) an unrefereed 'paper fair', (iii) a database journal subject to the normal constraints on quality, and (iv) a highly-structured enquiry-response system. Form (iv) is already widely available to the scientific community and much used. Its supporters are very enthusiastic. However, recent attempts to develop form (iii) have been singularly unsuccessful and frustrating.[7] The reason for failure was given as the inability of the devised electronic journal system to speed up the exchange of scientific information. However, proponents of the electronic journal maintain that the difficulties preventing a faster distribution will be overcome and experiments continue.[8]

9. The Educational Resource Centre

The other example is of the educational resource centre which was set-up at Clarkson College New York by Walter Grattidge in October 1980.[9] This centre provides what is described in the brochure as 'technologically assisted education functions'. Here, computer based teaching incorporates in addition to hardware and software, 'courseware' which is the name given to the software modules required for educational instruction (or information transfer). However, the College has a library containing 130,000 books and it is expected that this will grow steadily although most of the recent accessions have been in microform. Nevertheless, the educational system at Clarkson College needs conventional library resources for full effectiveness and is likely to continue this way for many decades.

10. Concluding Discussion

These examples lead directly to the following important conclusions:

(a) an electronic data network is useful only to the extent that it satisfies the need for quicker access to information than that obtained by other means;

(b) the demand for printed matter will exist even when 'electronic publishing' has become firmly established;

(c) retrospective conversion of the contents of libraries to machine readable form is not yet a feasible operation;

(d) depository libraries will need to record the contents of these databases for posterity unless some other means is adopted for the provision of archive copies.[10]

In connection with conclusion (c) it is important to note that the typical library of (say) 10^5 volumes of average (say) 500 pages of 400 words contains 2×10^{10} words = 2×10^{11} characters = 200 kilo Megabytes of store. A disc store to accommodate that number of characters on-line would cost about £20 million and occupy 0.2 hectare floor space using currently available computer hardware. To express this fact differently, a disc store for the contents of a book would cost at least ten, and possibly one hundred, times the price of the book and would require at least as much storage space. These comparisons show the degree of enhancement in electronic data storage and retrieval which must be achieved before the printed word becomes obsolete.

In the near future it is hoped to connect a library-based minicomputer on to the Oxford computer communications network for access by the science departmental libraries. The chosen system will have a disc character store of 64 Megabytes. Initial trials will be conducted with the bibliographic file of the *Union list of serials in the science area, Oxford*, as the database. Later, this will be augmented by the addition of detailed holdings for current periodicals including arrival dates for recent issues. This information is economical to store and since it is already required in the main library the database utilization should be optimized. The extension of the database to include other textual material will depend on the results of trials.

References

1 SHAW, Dennis. *Cooperation amongst the science libraries at Oxford University*. Proceedings of the Eighth Meeting of IATUL, Enschede, May 28-June 1, 1979, pp. 117-130.

2 *World guide to scientific associations and learned societies, 1978*, p. 225. (Verlag Dokumentation, München).

3 KEENAN, S. and ATHERTON, P. *The journal literature of physics : a comprehensive study*. American Institute of Physics, 1964.

4 MEADOWS, A.J. *Communication in science*. London, Butterworths, 1974.

5 *A programme for a national information system for physics and astronomy 1971-75*. American Institute of Physics, Information Division, 1970.

6 TUROFF, M. and HILTZ, S.R. *The electronic journal : a progress report, 1979*. New Jersey Institute of Technology, U.S.A.

7 SENDERS, John W. *The electronic journal*. EURIM 4 Proceedings (Brussels, March 23-26, 1980) pp. 14-16. Aslib, 1980.

8 MORAY, Neville. *Electronic journals : an editor's view*. EURIM 4 Proceedings (Brussels, March 23-26, 1980) pp. 17-18. Aslib, 1980.

9 LEAPMAN, Michael. *Diary of the two cultures*. The Times, December 8, 1980, p. 12.

10 HILL, M.W. Private communication, March 2, 1981.

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USER STUDIES IN CONNECTION WITH THE DEVELOPMENT OF A DECENTRALIZED LIBRARY NETWORK

Nancy Fjällbrant and Olof Friberg

Chalmers University of Technology, Gothenburg, Sweden

Introduction

University libraries aim to provide adequate information resources for both undergraduate students, research workers and members of the teaching staff. The needs of these groups vary from discipline to discipline, but have some common factors. The research workers and academic staff require access to a far wider range of periodicals and books than undergraduates (especially in the first years of university study). In order to meet these needs a number of library models have been developed ranging from highly centralized to decentralized collections.

The German library system of 'seminar libraries' (Fischer 1950-60 [1], Thompson, 1942 [2]) has had a marked influence on the development of Scandinavian university libraries (Grönberg, 1970 [3], Tveteräs, 1963-64 [4]). This model consists of libraries decentralized both with regard to site of collection and administration of the units. In Scandinavia all the older universities have departmental or institution libraries of varying size. These libraries are, as a rule, under the direct administration of university departments. Thus library resources are provided by network systems in which there are varying degrees of communication. These networks resemble to some extent those to be found in Oxford, Cambridge and London and at some of the old established universities in the USA, for example Columbia and Harvard.

In times of economic plenty the separate units in such a network tend to expand independently, but with limited financial resources there is a greater demand for cooperation. The limited economic funds of the late 1970s have given rise to a number of surveys on the extent and cost of decentralized library collections, for example in Sweden surveys have been carried out at Uppsala University [5], Umeå University [6], Caroline Institute, Stockholm [7], Linköping University [8], and Chalmers University, Gothenburg [9], other Scandinavian countries for example Denmark [10] and in the United Kingdom at Oxford by Shaw, 1979 [11].

It is usually assumed that the costs are less for a centrally administered library collection than for dispersed groups of material, Ashworth, 1976 [12]. Organization

should, however, reflect the needs of the library users and these may well be at variance with a centralized collection. The advent of computer technology and improvement in telecommunications could be used to develop a system of coordinated decentralization in accordance with the needs of a dispersed group of users.

This paper describes a pilot study of the attitudes of library users at Chalmers University of Technology to cooperation with the main university library and to the use of computerized information networks.

Background - The place for the study

Chalmers University, which was founded in 1829, is now a Swedish state university of technology with six Schools of Engineering: architecture, chemical engineering, civil engineering, electrical and electronics engineering, engineering physics and mechanical engineering. There are, at present some 4.000 undergraduates and 600 postgraduate students. During the university's 150 years of existence some 75 departmental libraries of varying size and type have grown up. A recent survey of the libraries at Chalmers has shown that the total collections in these libraries are of the same size as that of the university main library (Fjällbrant and Malmgren, 1981 [9]). The distribution of these collections can be seen in Table 1.

Table I. Holdings of Departmental Libraries at Chalmers University

School of Engineering or Group	Collections (metres of shelving)				
	Books	Periodicals	Abstract/ Index	Hand-books	Total *
Mathematics	330	275	1	2	608
Physics	318	443	47	17	825
Mechanical engineering	672	426	37	62	1279
Chemical engineering	349	520	125	53	1056
Electrical and electronic engineering	733	766	7	36	1574
Civil engineering	408	295	16	27	830
Architecture	569	273	3	37	899
	3379	2998	236	234	7071

* Includes even special collections e.g. preprints and broschures.

The 1979/80 budget for literature acquisitions at the departmental libraries was 1.540.000 Skr which can be compared with 1.470.000 Skr for literature for the main library.

The libraries at Chalmers are, with two exceptions, situated on the main university campus (see map - Figure 1). The distance between the departmental libraries and the main library varies between 50 m and 550 m. All libraries share a central telephone service and many of the departments have direct computer communication lines to the Data Processing Centre for the Universities and Colleges in Gothenburg.

Prior to 1980 there has been no union catalogue of periodicals for the university. The book holdings of a number of libraries were, however, included in the catalogue of the main library.

The libraries at Chalmers University are at present decentralized both with regard to site, collections and organization.

Use of the libraries at Chalmers University

In a study of the use of Chalmers Library carried out by Fjällbrant in 1974 [13] it was seen that postgraduate students used the departmental libraries (44 %) far more than the main library (17 %) as a place for optional studies. Corresponding figures for undergraduates were 9 % and 6 %. During the last five years undergraduate use of the main library has increased dramatically. The 1980 survey of the libraries at Chalmers confirmed that the departmental libraries primarily served the needs of research workers and academic staff. Undergraduates, (with the exception of those engaged on theses or projects) were only granted access to 70 % of the departmental libraries. Research workers and teaching staff had keys to the libraries, whereas undergraduates could use them only during restricted opening hours.

User attitude study

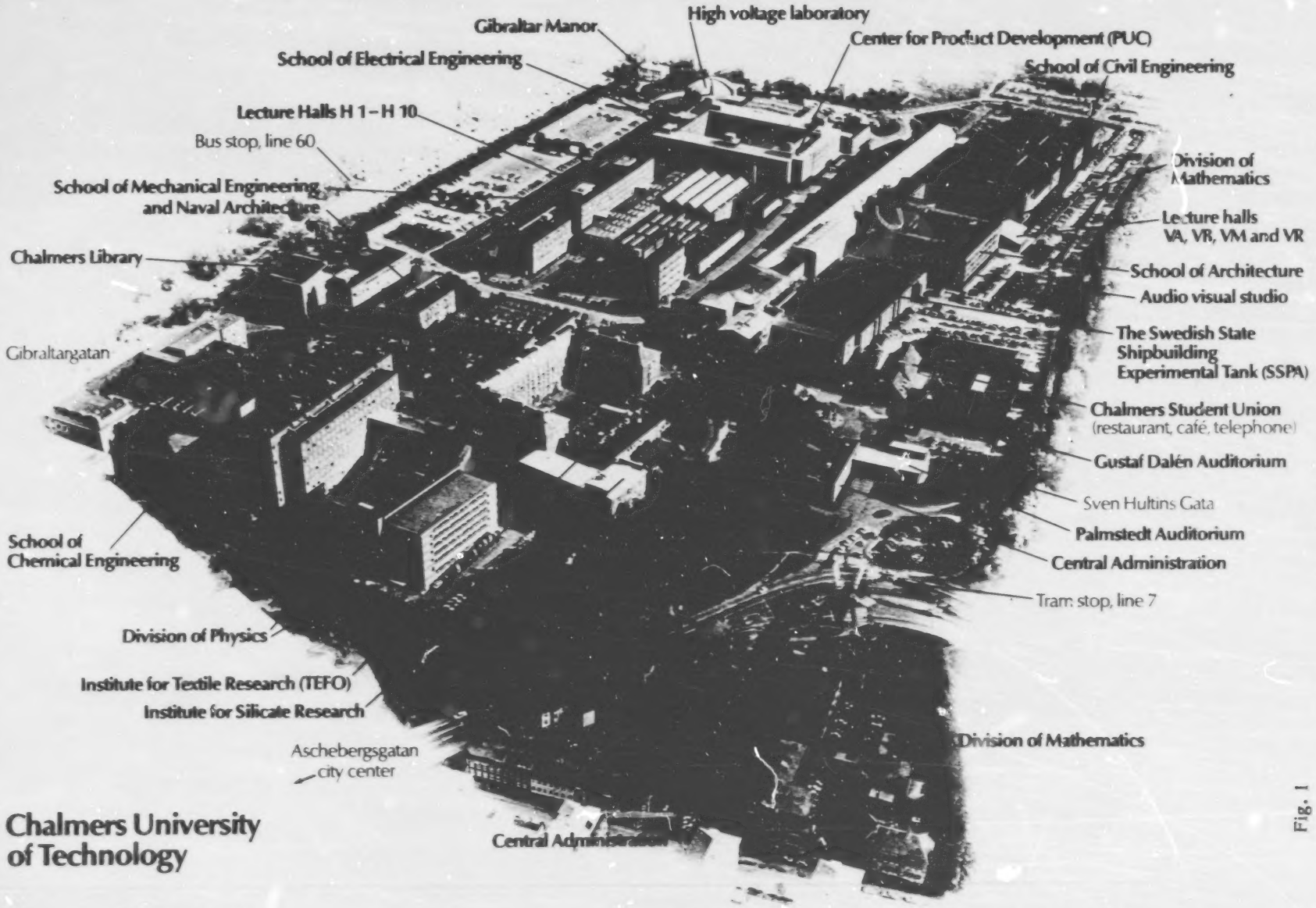
The financial restraints of the late 1970s led to the consideration of rationalization of literature resources for the university as a whole. In connection with this, it was decided to study the attitudes of users to

(a) cooperation with the main library

(b) computerization in connection with available literature.

Method

It was decided to make use of the interview method rather than the questionnaire for enquiring about attitudes to cooperation and computerization. This method was chosen because of its high response rate and the ease of reaching the highly concentrated target group. Interviews concerned with attitudes to the main library cannot be carried out by



Chalmers University of Technology

Fig. 1

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164

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staff from the main library. A 'neutral' person - a postgraduate student carried out a series of interviews according to a pre-structured series of questions formulated in collaboration with staff at the main library.

It is extremely difficult to answer questions about a situation or process that the interviewee has not experienced. One example of this had been seen in a series of long-time studies of the use of Chalmers Library carried from 1974 to 1979. Users were asked about their attitude to open-stacks (prior to the opening of the library 1978), 51 % stated that this was "very desirable" or "desirable". After the opening of the library 57 % stated that open-stacks were "very good" and 33 % "good" (Total 90 %). In order to ask about attitudes to computerization, it was necessary to be able to show users the use of some relevant database. The periodical holdings of the main university library already existed in machine readable form. A small online database was constructed with the help of personnel from the Gothenburg University Data Processing Centre and Chalmers Library. This database contained the titles of the 5.500 periodicals located in the main library, plus the titles and locations of the periodicals held by the departmental libraries. This database could be searched online by means of simple commands where the user is led through necessary search stages. It was possible to carry out searches for words contained in the title. The separate search terms could even be combined. The current holdings of any of the 80 libraries could be obtained in the form of an off-line printed list from the computer centre.

Another database which contained material of potential interest to Chalmers library users was a test database for Chalmers University Reports - CHARAD. This database, had been constructed by personnel from Chalmers Library and the Medicindata Department of Gothenburg University in order to test the interactive search system 3 RIP. (Lund, 1980 [14]) The database held 300 Chalmers' reports and included the following searchable elements: words from the title, keywords, authors, Chalmers departments, acquisition number, report number, year of publication and language in which the report is written. The search terms could be combined with Boolean operators in a well-designed flexible search system.

It was decided to make use of these databases in the following way. Users would be shown how to use the base for periodicals, then allowed to search it directly online. The base for reports would be demonstrated by the investigator. (The more sophisticated 3 RIP search technique was considered too difficult to teach in a very short time).

After the display/use of the data bases, questions would be put as to attitudes and reactions to computerized handling of literature.

24 libraries (a third) of the libraries on Chalmers campus were visited. These libraries were selected according to size and in proportion to the Schools of Engineering. Two other campus libraries, those of Swedish national research institutions (The Swedish Institute for Textile Research and the Swedish Maritime Research Centre) were also visited.

Results

The results are divided according to reactions to computerization (1) the database for periodicals and (2) the report database, (3) the computerization of literature resources, (4) use of other departmental libraries and (5) cooperation with the main library.

(1) Reactions to the database for periodicals

At all of the departments questioned, people considered this database useful. (This applied to the following groups of people: academic staff, research workers and secretaries). People were, however, sceptical as to the need for an online function: it was felt that a union list would be adequate for most purposes. With two exceptions, all the users found the search technique 'very easy' or 'easy'. (The difficulties reported from two libraries were attributed to lack of experience in using terminals).

A number of suggestions were made:
It would be an advantage to include:

(a) holdings for all libraries
(b) holdings from other universities
(c) details of individual articles
(d) location codes for the holdings of the main library

It would be an advantage to have the possibility for subject searching.

Respondents were then questioned about their opinion on the need for a similar online database for books and conference proceedings etc. Response can be seen in Table II.

Table II Attitudes to an online database for books

Are you interested in an online union catalogue for books etc?	
Very much	20 %
Much	40 %
Somewhat	20 %
Not very much	10 %
Hardly at all	10 %

It was pointed out that it was desirable that such a database could provide information about the status of a book (out on loan etc.)

All of the departments (with two exceptions) estimated that they possessed resources to register acquired books in such a database, if simple instructions were provided.

(2) Reactions to the prototype report database

Reactions after a demonstration of the report database can be seen in Table III.

Table III Reactions to the prototype Report database for Chalmers reports *

Very useful	0 %
Useful	45 %
Not particularly useful	35 %
Not useful	10 %
Don't know	5 %

* (Note - only a limited number of the university reports are to be found in the base at present)

With regard to the search system 3 RIP, all the people who saw the demonstrations stated that the search technique was easy and flexible. There were no suggestions for alterations or improvements. The demonstrator commented that it would be necessary to provide a manual describing the use of the search system. (This has been confirmed in another experimental use of 3 RIP for subject searching in Mechen - a Swedish database covering 160 journals in the field of mechanical engineering).

All the departments estimated that they possessed resources for carrying out the registration of their reports in a database.

(3) Reactions to computerization of literature resources

The majority of the departments at Chalmers University possessed terminals and many had direct computer communication links with the Data Processing Centre for the Gothenburg Universities. Of the departments, at present without terminals, several were planning to purchase equipment.

In those cases where there were already terminals, it was stated these could be used for the computerized registration of documents at a marginal cost. Departments which did not possess terminals, were not, however, willing to buy a terminal merely for use for literature registration and retrieval. Literature search facilities were desired by one

department at present without a terminal. Respondents were asked if they had already considered registration of literature with the help of a minicomputer or microcomputer. Five of the university departments had considered the possibilities for such registration. The Swedish Institute for Textile Research had already constructed a computerized literature data processing system using the Gothenburg Universities Data Processing Centre. This system could be used for the production of catalogue cards, but did not include subject search facilities.

Respondents were asked about their use of computerized information retrieval services. 24 of the 26 university departments and research institutions had made use of some form of computerized information retrieval service: Half had used the computerized IR services at the main library, the Swedish database IR system BYGGDOK had been used by all respondents from the Schools of Civil Engineering and Architecture, a number of departments had SDI-profiles at the Royal Institute of Technology Library, Stockholm. Other databases which had been used include MEDLINE and Ship Abstracts.

Respondents were asked if they would like some form of training in computerized information retrieval. All respondents (with one exception) were positive to some form of training. Some of the respondents stated that they thought that their needs could be met by the provision of suitable manuals.

(4) Use of other departmental libraries

Respondents were questioned as to their use of other departmental libraries. Findings are shown in Table IV.

Table IV Use of other departmental libraries

More than once a week	0%
Once a week	0%
Once a fortnight	0%
Once a month	50%
Less than once a month	50%

Respondents were asked if they wished for increased access to the collections in other departmental libraries. At one department people thought that an increase in 'open hours' would be useful. Others thought that collections were available as much as needed. (Note use of other departmental libraries is very low).

(5) Cooperation with the main library

Users were asked what they thought about the main university library. The users had a very positive attitude to the main library. Library personnel were described as being helpful, knowledgeable and friendly. The speed at which required literature is obtained was favourably commented on.

The courses in information retrieval were popular and users appreciated the availability of international computer-retrieval systems and help in their use.

Suggestions for improvements were:

Some institutions considered that the acquisition of literature was unevenly distributed with regard to subject. They wished to play a more active part in the literature selection process.

People at some departments wished to be able to borrow periodicals again (periodicals from the last 10 years are no longer available for loan).

Increase in the number of hours open was suggested.

One department suggested that it would be useful to be able to order photocopies by telephone.

Two departments thought that the catalogue and reference area was too crowded and noisy. (This is due to a marked increase in use of the main library by undergraduates).

One department thought that the periodicals reading room was too crowded.

One department said that costs for personnel at the main library were too high.

Departments were questioned as to their interest for cooperative acquisition of literature in such a way that they could contribute 50% to the cost of a book which would be placed in the main library. The response to this question was an unequivocal "no". One department was, however, prepared to purchase expensive conference proceedings in this way.

Respondents were questioned as to their interest for a so called "Departmental library service" in the main library for advice in acquisitions, cataloguing, periodical and report registration etc.

Hardly any of the departments expressed an interest in such a service. Many assumed that this help is available from the main library. One department was interested in such a service, and two expressed the need for help in literature acquisitions. Half of the departments would like the main library to provide short courses in cataloguing and classification.

Finally respondents were asked for suggestions which would lead to a rationalization of the literature resources. Several departments suggested:

1) Construct a database for books bought at Chalmers University - in order to avoid unnecessary duplication
2) The departments ought to cooperate with the main library with regard to acquisition of literature
3) Cooperation in the acquisition of literature should lead to discounts
4) The university should create special routines and channels for buying books etc.

Suggestions made by people from one department

1) Centralize the separate departmental collections within each School of Engineering
2) Avoid duplication of periodicals
3) Reduce the costs for personnel at Chalmers library and buy more books
4) Centralize the literature to the main library.
5) Decentralize the literature to the departmental libraries.

The investigator noted a certain amount of apprehension towards the idea of lending literature to persons not directly connected with the departments in question. It was pointed out that resources were inadequate for circulation control. It was also pointed out that terminal searching did not have to necessarily take place at the departmental library, but could be carried out at the main library.

Discussion and conclusions

Fjällbrant and Malmgren, 1981 [9], had found that the departmental libraries were mainly used by the academic staff and research workers of the respective departments. Undergraduate students working on research projects were allowed to use the departmental literature collections, but only 70 % of the libraries were open to other undergraduates. In an earlier user study from 1976 Fjällbrant had found that only 9 % of the undergraduates made use of the departmental libraries as a place for optional studies, whereas the corresponding figure for postgraduates was 44 %. These findings were confirmed in this study which also brought out the lack of use, by research workers, of literature resources housed in libraries belonging to other departments. Each collection primarily serves the needs of staff and research workers within its department. This results in duplication of literature and an uneconomical use of resources.

The users interviewed were positive to the use of a computerized network, which would result in an increasing awareness of available literature on the campus. Most of the departments possessed terminals and many already had direct computer communication links with the Data Processing Centre for the Gothenburg Universities. Reactions to use of the two databases demonstrated were that such systems were easy to use. The departments stated that they possessed, in most cases, resources to input their own material - reports, books etc. into similar databases.

User attitudes to the main university library were very positive. The desire to play a more active part in literature acquisition was expressed. Experience of attempts to induce this, has, however, shown that this is a very variable factor - certain individuals are active in suggestions for various periods of time and this leads to uneven purchasing with regard to different subjects. The idea of a telephone answering service might be useful for ordering material, particularly when the university library is closed. With one

exception, users could not contemplate sharing the costs for books, if these were to be placed in the main library. (Yet this suggestion had previously been made by representatives from the School of Chemical Engineering!)

Any suggestion of increased centralization and bureaucratic control was viewed negatively - yet a so-called departmental library service is the rule at most of the larger Swedish universities. In spite of this several departments were eager to have help in economical ways of acquiring literature and over half wished for some form of training in library routines such as cataloguing and classification. Help was required but this must be achieved at no extra cost!

The conclusions that can be drawn from this study and the earlier survey by Fjällbrant and Malmgren, are that at present, the total literature resources at Chalmers University are not being used with maximum efficiency. The users have a positive attitude to computerization in connection with literature resources. At the same time, there is apprehension towards centralization and increased administrative costs. In view of these attitudes and the relatively good general availability of terminals and computerized communication links, it would be best to try to develop some form of local computerized information network containing information on the literature held by each department. This kind of network could be of major importance in the development of a coordinated decentralized library network based on the actual needs of users. Such coordinated decentralization of literature could contribute to research and teaching needs, whilst reducing costs (due to reduced duplication and unnecessary interlibrary lending). This solution appears to the coordination of literature resources seems more likely to succeed at Chalmers University, than a system with centralized processing of material. One feature required in coordinated decentralization is the possibility of providing adequate and regular training for departmental library personnel.

References

1. FISCHER, N. Die Spezialbibliotheken - C 218 - Institutsbibliotheken. Handbuch der Bibliothekswissenschaft, Bd. II, 2. Aufl., Stuttgart, 1950-1960: pp. 594-597.

2. THOMPSON, L. The historical background of departmental and collegiate libraries. Library Quarterly, 12 (1942): p. 49.

3. GRÖNBERG, L. Die Zusammenarbeit der Universitätsbibliothek von Uppsala mit den Bibliotheken der Wissenschaftlichen Instituten. Museion N.F., R.2, Bd.4, T.2, Wien 1970: pp. 521-527.

4. TVETERÅS, H.L. Scandinavian university and college libraries. Library Trends, 12, 1963-64: pp. 483-484.

5. Institutions- och filialbibliotek vid Uppsala universitet, utarb. av Arbetsgruppen för utredning rörande institutionsbiblioteken, Uppsala universitetet. Uppsala, 1979.

6. ALLÉN, A. En enkätundersökning om institutionsbiblioteken inom Karolinska institutet. Stockholm, Karolinska Institutets Bibliotek, 1979. KIB-rapport nr. 12.

7. Institutionsbibliotek vid Umeå universitet. (Departmental libraries at Umeå university) Umeå, Umeå universitetsbibliotek, 1979.

8. KLASSON, M. & ERIKSSON, L. Institutionsbiblioteken vid universitetet i Linköping. (Departmental libraries at Linköping university) Linköping, Linköpings universitetsbibliotek, 1980. Linköpings universitetsbibliotek publikation nr. 23.

9. FJÄLLBRANT, N. & MALMGREN, M. Bibliotek vid Chalmers tekniska högskola. (Libraries at Chalmers University) Göteborg, Chalmers bibliotek, 1981. CTHB-publication nr. 22.

10. Forskningsbibliotekernes målsætning (Aims of the academic libraries) afg. af Forskningsbibliotekernes målsætningsudvalg, København, 1977.

11. SHAW, D. Cooperation amongst the science libraries at Oxford University. Library Cooperation: trends, possibilities and conditions. Proceedings of the Eighth Meeting of IATUL, Enschede, May 28-June 1, 1979. Göteborg, Chalmers University of Technology, 1980.

12. ASHWORTH, W. The administration of diffuse collections. In: Ross Shimmon (ed). A reader in library management. London, Bingley, 1976: pp. 111-128.

13. FJÄLLBRANT, N. A study of user behaviour and needs at Chalmers Universitet of Technology Library. Göteborg, Chalmers bilbiotek, 1976. CTHB-publikation nr. 10.

14. LUND, T. CHARAD - en kort beskrivning. Gothenburg, Chalmers University Library, 1980. Internal report.

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THE TECHNOLOGICAL UNIVERSITY LIBRARY'S COMMUNICATION WITH ITS PUBLIC

A.C. Bubb

Librarian, University of Salford, Salford, Great Britain.

University libraries are channels through which communication is effected, yet "they are not closed and static systems, but must continually develop in relation to their environment, must be prepared to change the organisation of their various parts if the situation requires, in order to survive and to fulfil the purposes for which they were created".[1] Being more than a mere channel, therefore, the library "engages in transactions with other systems, the local community, university, research institute or industrial firm".[2]

Hence the university library interacts and communicates with its public, but in fact with a number of different publics, of which the most important and varied are the public made up of members or close associates of the parent university and the public whose members lack such a close and formal contact but who nevertheless at times may be aware of the library or need its services. It has been argued that another public is that upon which the library depends for funding, but this group, even if it can be distinguished from the first two, has relations with the library which although of great importance are of a relatively uncomplicated nature.

If the need for interaction and communication with its public is accepted for the library it has sometimes been held that libraries need not be particularly active in the field and that such activity may indeed be in some way slightly improper. "As non-profit service institutions, whose primary product is an intangible concept called information, it may at first seem unlikely that academic libraries have much in common with industrial or business firms in the profit sector of the nation's economy".[3] It has been stated, under the ominous title "The selling of the library"[4] that the library is a "serious, substantive, essential institution whose mission is to provide information and the means of education that an enlightened public needs" and that, even in the U.S.A., it should not be necessary "to hire hucksters to create a phony pitch to draw crowds".

One sees how readily the relations between the library and its users can become involved with commercial attitudes and jargon. There is an easy transition from communication with the library's public to promotion of library services and thence to marketing. Those who advocate the active promotion of the library may freely use terms with commercial overtones, but within marketing there is a recognised element of communication which is acceptable to those who dislike the commercial aspects. One may wonder however whether it is true that "if the non-profit organisation does not satisfy its clients it does not necessarily face the loss of support from the funding source".[3] That funding public mentioned above may be of little importance for the purposes of this discussion but the other publics can express dissatisfaction quite clearly since communication is a two-way affair. In any case the marketing definition of communication can well include what has been called atmospherics. In that way even a library not consciously active in the field will communicate whether or not it wishes to do so, and if it does not act positively it runs the risk of communicating to its users an impression contradicting its own perhaps

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unavowed aims.

In dealing with this communication problem the technological university library will discover an overlap between the two publics mentioned above. It is perhaps easier to provide for those closely linked to the library and its parent institution. The classic and now generally accepted devices of library handbooks, instructional programmes, audio-visual aids, guiding of the building and its stock, and those vaguer but important influences lumped together under the term atmospherics are all available for use and the repertory is growing.

Within the relatively closed area of the institution there are however other forms of effective communication. For example, the opportunities open to the library staff to take part in various ways in the teaching and research work of the university can provide occasions for informing and influencing non-library colleagues. This type of communication and opinion-building should never be neglected and can of course produce indirect effects upon the attitudes of colleagues who may at other times be called upon to judge the library's financial needs and evaluate its services. Communication is easier if it is not always the library addressing the rest of the institution but emerges between colleagues aiming at a common goal using different means.

People more loosely connected with the institution present more difficulties, but also better opportunities for ingenuity on the part of the library. They may well have pre-conceived notions of what the library can and should do. Not being closely connected with its work they may have excessive expectations of its abilities, or on the other hand be reluctant to ask for what can easily be supplied. For example, one may find in the former case little knowledge of the extent to which libraries are now inter-dependent and in the latter a surprising degree of ignorance (sometimes in those who from scientific or industrial training should know better) of the increasing competence of electronic means of information handling.

The library's communication with its public is therefore a complex and surprisingly subtle network of relationships. The library must for example compete in some ways with commercial forms of communication which assault even members of technological universities. Its audio-visual presentations may be compared with highly professional television productions, its atmosphere with that of shops cunningly designed to put the visitor in the right frame of mind to buy.

There have never been so many devices available to help communication with the library's public or such a variety of services to explain, yet the library need not despair. Recent experiences in introducing to a technological university information services from the British Prestel system and the analogous radio services seem to show in fact that the library, used to handling a range of information sources and regarded with some confidence by its publics, can more effectively explain and promote a basically commercial service than the providers of the service can do themselves. In the same way it seems likely that a library can better demonstrate the strengths and short-comings of on-line information services than the most persuasive of technological advocates.

As the library becomes more complicated it is less easily understood by the user and communication between the two becomes more and more necessary. In technological universities this has long been recognised and there have

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even been dreams of a library which could almost communicate itself: "If all the library's staff were propped up dead at their posts, like the Legionnaires in Beau Geste, it should be possible for a student on his first visit to find his way to the books he needs".[5] Even if such a basic self-explanatory library were possible, desirable, or acceptable to the staff, there would still be a great deal to do in other forms of communication.

We walk a knife-edge therefore with on the one side the perils of advertising, for which one pays, with many consequent problems, and on the other the risk of failure to achieve among the public that understanding which produces intelligent appreciation and perhaps incidentally financial and other support. In the middle are the more generally accepted aspects of communication: publicity in all its forms, for which one does not pay, the network of personal contacts, and all the less tangible atmospherics.

A technological university may well have advantages in this field. Many members of its public after all should have some understanding of the effective functioning of systems, and those who fear the knife-edge may take heart from the dictum that "there is no need in the library context to examine the tortuous arguments about what is public relations and what is advertising."[6]

Communication between the library and its public seems to be inescapable. It should therefore be regarded with care by the library. It is something more than the instruction of readers which we have grown to accept as a normal part of library activity in technological university libraries. It seeks to inform, but it also seeks to inculcate an attitude of mind and a broader understanding of the purposes of the library and of its relevance to the institution's activities and the wider world outside with which the institution has relations. These needs are easy to lay down in statements of policy. They are less easy to bring about in the work of a busy library possibly meeting economic difficulties.

Communication is above all a relationship between human beings. It therefore makes particular calls upon the capacities of those human beings responsible for running libraries. In times past a university library might well have had on its staff many people to whom the type of communication now being suggested would have been uncongenial or apparently quite irrelevant to their work. With the change in expectations we may therefore argue that those members of staff coming into the service of technological university libraries must have a greater awareness than their predecessors of communication needs and that their personalities and training will encourage such awareness. There is work here for the educators of librarians.

We may be at the end of a period during which many developments took place which seemed to produce a form of library organisation markedly different from that seen in the past. "The 'new men' in libraries, in their search for greater efficiency and improved use of resources, turned to the business world and adapted some of the methods of the economists or the sociologists to the library milieu".[7] We may have been guilty of feeling that after doing this we had reached a summit and that little real advance would be possible beyond that point. There are however stirrings which indicate that further examination of our work in the communication field might be appropriate. For example user education (a restricted but nevertheless essential part of communication) may not have achieved all

one hoped and perhaps never could do so. It has recently been commented that "user education still remains more isolated than integrated just as it is formal rather than informal. Our academic colleagues generally are unmoved by our efforts".[8] Is this not an argument for moving forward on the broader front of communication? Furthermore communication between the library and readers is essentially human while one could argue that the information contained in the library, and the methods by which the library must dispense it, is inhuman. It has been said that " 'information' has been transformed into a commodity, with the resulting assumption that the more we have the better, and that the purpose of libraries is to buy larger and larger quantities".[1] That is perhaps over-simplified but may serve to stress the importance of communication between library and reader.

"The more we communicate the way we do, the more we create a hellish world... a place which is void of grace-the undeserved, unnecessary, surprising, unforeseen. A paradox is at work here: ours is a world about which we pretend to have more and more information, but which seems to us increasingly devoid of meaning".[9] Any small effort the library can make to increase the amount of meaning, even if it is professionally unable to diminish the amount of information, is surely worthwhile.

References

1. FOSKETT, D.J., General systems theory and the organisation of libraries. In: Holroyd, G. ed. Studies in library management, Vol. 2. London, Bingley, 1974, pp. 10-24.

2. McGARRY, K.J., Review of Orr, J.M., Libraries as communication systems. Journal of Librarianship, 11 (2) 1979: pp.152-156.

3. BELLARDO, T. and WALDHART, T.J., Marketing products and services in academic libraries. Libri, 27 (3) 1977: pp. 181-194.

4. BERRY, J., The selling of the library. Library Journal, 99 (2): p. 85

5. CHILDS, N., Do students have to use libraries? Times Higher Education Supplement, (85): p.24.

6. USHERWOOD, B., Library public relations - an introduction. In: Holroyd, G. ed. Studies in library management, Vol. 2. London, Bingley, 1974, pp. 115-133.

7. STIRLING, J.F., Academic libraries in transition. In: Vaughan, A. ed. Studies in library management, Vol. 6. London, Bingley, 1980, pp. 13-29.

8. STEVENSON, M., Ten years on - prospects for user education. U.C. & R Newsletter, (3) 1981 : pp. 6-7.

9. DUPUY, J-P., Myths of the informational society. In: Woodward, K. ed. The myths of information : technology and post industrial culture. London, Routledge and Kegan Paul, 1980, pp. 3-17.

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LIBRARIES AND THE COMMUNICATION OF INFORMATION: THE JAMAICAN SITUATION

Yvonne T. Lawrence

Librarian, Supreme Court Library, Kingston Jamaica,
Postgraduate Student, Department of Library and Information Studies
Loughborough University, England

There is no doubt that developing countries face numerous difficulties - lack of adequate financing being a major factor. Many of these countries operate on meagre and rather limited financial resources, and they have often been left with no option but to produce priority lists for national development, which will include, primarily, those areas which will bring about speedy monetary returns. The consequence for library and information systems, which are not revenue earners is, that in most cases they are not considered to be priority areas. Through neglect therefore, development of these areas have been very slow.

Lack of progress in this field may also be attributed to the existence of high rates of illiteracy within some countries - the general demand for information being relatively low, while in others it could stem from the lack of interest by politicians who resist channelling funds into programmes from which they gain no political mileage. But, getting back to priorities - developing countries must take cognisance of the fact that if an environment for the communication is to exist, attention must first be paid to the development of the library and information centres in the country, as it is through these that information will be communicated.

Borchardt[1] has stated that "It is no longer seriously doubted that the economic development of any country depends directly on the availability of information services for the support of industry and technology". We must also note that it has been estimated that within the next decade, Third World countries will be producing material at the annual rate of 12-14 million documents.[2] Perhaps the situation is best summed up by Professor Havard-Williams -

> "What priority should one give to education, information and libraries? Realistically, one has to agree that drains come before books, that industrial development is essential to greater prosperity. On the other

hand, if modern technologies are to be developed one must have an educated population. If education is to be exploited economically then information and libraries are essential."(3)

Third World countries must take the necessary steps to lay the foundation for the development of their information systems. They must seek practical and economic ways to organise and store information for speedy retrieval and dissemination, and to implement systems which will co-ordinate information and efficiently communicate it to the user.

The task is not a simple one. Surveys of existing services, formulation of guidelines, clearly defined objectives and sound justification are only a few of the factors to be considered and effected in planning a programme for the implementation of an information system. Robredo outlines the problems encountered in setting up information networks in developing countries and suggests that success in implementation will rely on a) technological b) infrastructural and c) human and environmental factors,(4) the latter being the most significant in terms of decision-making as governments and policies frequently change. The task requires careful planning, perseverance and support from the policy makers.

Jamaica, like so many other Third World countries has had and still has, its share of problems, which include shortage of foreign exchange reserves and a reduction in earnings from its major exports. The country is now facing a period of economic decline. It must therefore embark on a programme for economic recovery, and its success will largely depend on the availability of an adequate and efficient information system, which will cater for persons at every level of the society. Despite its many problems, Jamaica, in recognition of the importance of information to national development, has made significant strides in the development of its library and information systems, being the first Caribbean country to have made a positive move toward the implementation of the NATIS objectives.(5)

In this paper I will try to describe the information environment which exists in Jamaica, by looking at the scheme which has been established to eradicate illiteracy and thus procure an educated population, and by highlighting some of the institutions which comprise the networks proposed for the national information system as well as the role they play in the communication of information.

Background

Jamaica, politically independent since 1962, is the largest and most developed of the English-speaking islands of the Caribbean. Before becoming a British colony in 1655, the island was under Spanish rule from its discovery in 1494. Its area is 4,411 square miles and its 2,169,000 inhabitants are distributed among the 13 parishes of the island. Industry (bauxite), tourism and agriculture are the chief sources of national income, the latter employing a significant percentage of the country's labour force. Jamaica is accessible by sea and air and Jamaica International Telecommunications Ltd. (JAMINTEL) links Jamaica to the rest of the world through telephone, cable, telex and ancillary systems such as its Satellite Earth Station. Internal communications are effected by an automatic telephone exchange system (Jamaica Telephone Company Ltd.), 3,000 miles of main roads, and railroads. Post offices are established in every town and postal agencies are located in many villages.

Illiteracy and Education

For many years, the country experienced serious social problems which hindered its development, particularly in the area of illiteracy. Education was formerly the responsibility of church missionaries and it was only after the abolition of slavery that the makings of an organised system of education began to unfold.(6) Primary education in Jamaica was never compulsory and so the country suffered the consequences - a high rate of illiteracy which up to 1970 was 50% (1970 Census).

Since 1962, great emphasis has been laid on educational and social programmes and perhaps the most significant of these was the launching of the National Literacy Board in 1972 for the purpose of eradicating illiteracy in the island by 1976. In 1974, however, the objectives of the Board were expanded and the Jamaica Movement for the Advancement of Literacy (JAMAL) was founded. Its objectives were:

"a) To eradicate illiteracy in Jamaica in the shortest possible time.
b) Improve the literacy skills of the adult population in Jamaica.
c) Develop human resources and so enable each adult citizen to participate meaningfully in the social, economic and cultural development of the country."(7)

JAMAL's aim was not only to eradicate illiteracy but to provide programmes of continuing education for the new literates, for the purpose of preventing lapsed literacy. This is being achieved through the holding of adult literacy classes on an island-wide basis, and through filmed and recorded lecture sessions for transmission on radio and television. Publicity for the literacy

programme is attracted by various methods e.g. a televised Literacy Quiz Championship programme and the Annual International Literacy Day. Harrison[8] considers the programme a worthwhile one which would be used as an example for other countries with similar problems.

Suitable reading material for the new literates, is in short supply and therefore JAMAL has embarked on a publishing programme of "readers" covering topics of general and national interest. The reluctance of commercial publishers to participate in the venture is rather unfortunate as by so doing it prevents distribution of this type of material to other countries having similar programmes. It is here that the public library service can make a very valuable contribution to the programme by its supportive role in the provision of material. This certainly applies to the Jamaica Library Service which provides large-print books for slow readers, in all its libraries throughout the island. The tremendous success of the literacy programme is evidenced by the fact that in 1975 the literacy rate was recorded as 86%.[9]

A recent announcement by the Minister of Education to introduce compulsory education at primary school level, was welcomed. JAMAL's role will include an Illiteracy Prevention thrust which will involve it in liaison between the home and the primary school, and provide skill training for 15-20 year old drop-outs from the education system.

Planning the library and information system

Jamaica has been indeed fortunate in that with the exception of a National Library, most of the fundamental requirements necessary for the building of a national information system, were already present when the idea was born. In 1972 an Exploratory Committee on Arts and Culture was appointed by the Prime Minister to "assess the cultural situation and recommend action."[10] The recommendations of that committee resulted in the appointment of the National Council on Libraries Archives and Documentation Services (NACOLADS) in 1973 which was directed to inter alia, make recommendations for the development of a national library and information system for the island, and the establishment of a national library. This move was a timely one, as September 1974 saw the adoption of the NATIS concept at the Intergovernmental Conference on the Planning of National Documentation Library and Archive Infrastructures.

In response to this Conference a follow-up Workshop on the Planning of National Information Systems for the Caribbean was organised in 1975 for the purpose of

examining the existing systems in the Caribbean and to formulating guidelines for the establishment of suitable systems for each island. In Jamaica, NACOLADS, proceeded towards the first stage in the formulation of its Plan (10) by firstly identifying the library and information organisations. Six Working Parties representing various types of libraries (including archives) were set up, to determine the number of types of libraries in the island, to examine their role and contribution to the system, and to make recommendations as necessary for the development of such libraries. Four other Working Parties comprising supporting areas were also set up to examine a) Manpower Resources, b) Publishing, c) Automation and d) National Priorities, Legislation and Financial Resources.

NACOLADS has proposed a group of networks in the Plan which has been adopted by Government. These comprise:-

a) National Library
b) Public Libraries
c) College Libraries
d) University Libraries
e) Archives and Records Management
f) Science and Technolo
g) Law
h) Physical Planning
i) Socio-economic areas

These networks are designed to facilitate the flow of information, to build on existing strengths and to develop weak areas. Based on recommendations made by NACOLADS since the adoption of the Plan, the National Library was created by The Institute of Jamaica Act 1978. This library, based on the former West India Reference Library collection, houses the largest collection of West Indiana in the Caribbean. The National Library will have responsibility for co-ordinating and supervising all government libraries which are represented in the networks. Each network has a focal point - an established library, which will in turn be responsible for the co-ordination of information within that network. This information will be stored at the focal point to facilitate the Referral Service which the National Library will offer as one of its functions in satisfying requests and arranging interlibrary loans. Each network will:

> "co-ordinate and/or integrate all government aided library services thus obtaining greater effectiveness and economical use of limited resources while at the same time maintaining the significant traditions and specific functions of individual library services." (10)

The institutions

Professor Saunders in discussing the role of libraries in the communication of information identifies four major functions which should obtain and which are of vital importance to the national development of any country:-

"a) the furtherance of technological, scientific and industrial advances
b) the process of education
c) the preservation and transmission of the national cultural heritage
d) the fulfilment of social and recreational needs."(11)

These factors are essential to the planning of the information infrastructure as it is necessary to make adequate provision of information to all levels of the society. With so much emphasis on scientific, technological and other professional information needs, there is a tendency to neglect a large percentage of the population, usually those living in rural areas who need information to assist them in their daily routines.(12) If we are to relate the above functions to types of libraries, they fall into groupings of a) special, b) academic, c) national and d) public libraries. How therefore do the libraries on the Jamaican scene measure up?

Special libraries

With few exceptions these represent libraries located within Government Ministries and their departments, as well as statutory bodies which are funded by government. No single body administers these libraries as each one is the responsibility of a particular Ministry. Although the co-ordination of these libraries is being carried out by NACOLADS, at the present time it is only a recommending body.

Some special libraries are well organised and are run by qualified librarians. These represent such areas as Education, Health, Law, Mining, Agriculture, and Statistics. More recently established and rapidly developing are libraries of statutory bodies such as the Urban Development Corporation and the Bureau of Standards. The largest collection of maps is housed at the Survey Department. On the whole these libraries are in dire need of attention and when one realises the important role they play in the decision making process, their development is urgent. These are the resources from which the policy makers will need to draw rather heavily. There is a vast amount of duplication of stock and the fundamental problems of budgetary requirements, accommodation and staffing are consistent among these libraries. NACOLADS' networks have effected organised grouping of these collections and amalgamations in some areas to eliminate duplication and overlap. The weaker areas will form part of a subsystem to be closely supervised by a qualified

member of staff of the designated focal point of the group. A wealth of information is to be found in many of these collections as well as in offices, but because of absence of trained staff to organise the collection, their potential remains unexploited through under-utilisation.

Special libraries in the private sector are on the increase and the most active of these is the Alcan Technical Information Centre attached to a Bauxite Company. Recent additions to the special library scene are the libraries of the International Bauxite Association and Jamaica International Telecommunications. Newspaper libraries attached to the island's leading daily newspapers also play their part in the communication of information by opening their doors to students and other researchers, while at least one law firm has already employed a librarian to organise its resources for use by its partners and other members of staff.

The adoption of the Plan has created an awareness of the implications for library development and it has had effect on the provision of new posts in areas which hitherto lacked trained personnel. The recent appointment of a Librarian at the National Planning Agency completed the picture and all focal points are now manned by qualified personnel.

Academic and other educational institutions

The largest academic institution in Jamaica is the University of the West Indies - a regional institution funded by the English-speaking countries of the Caribbean. Its main campuses are in Jamaica, Trinidad and Tobago and Barbados. The Mona campus (Jamaica) is served by a main library and its two Branches - the Medical and Science Libraries. Although their primary function is to provide research facilities for staff and students of the university, the libraries are not averse to participating in a national information system and thus extending the use of its resources outside of the University to assist research. There will be limitations, however, with regard to its priorities as its principal concern is for the university community. The libraries recognise their role in the communication of information and must effect the best methods to achieve this. Students can be introduced through library orientation programmes, to methods which will enable them to exploit the resources to the fullest because communication is a two way system. In the words of Saunders "... drawing on them" (resources) "itself means communication; means transfer from one source, or one person, to another."(11)

Several other libraries are located on the Mona campus. Some are well

established - the libraries of the Institute of Social and Economic Research, the School of Education, and the Department of Library Studies - others are not organised. Two independent libraries - the United Theological College Library and the Norman Manley Law School Library may also be found on the campus. The major libraries are co-operating in a venture to co-ordinate the resources of their libraries in a Union catalogue at the Main Library of the University. The entire collection of the Law School Library is already recorded in this catalogue.

There are some government-supported colleges which include the College of Arts, Science and Technology with an active library serving staff and students, and ten teachers colleges with organised libraries, five of which employ qualified librarians. The oldest professional school, the Jamaica School of Agriculture houses a library which again lacks trained staff, but the collection is well utilised.

Secondary schools are largely grant-aided but they belong mainly to private institutions such as churches, and are governed by independent school boards which determine library budgets. This means that the standard of the libraries were not very high in the past but the increasing awareness of the contribution that libraries make to the education process is evidenced by the fact that a number of recent library school graduates are being employed to organise these collections.

Primary and infant schools are serviced by the Schools Library Service which is based at the Jamaica Library Service Headquarters. Distribution of books to these libraries is effected by Bookmobile services to all the island's schools at this level of education. Because of inadequate accommodation problems experienced by many schools, the library collection varies in size. The Ministry of Education, through which this scheme is funded, adopted the School Library Standards, which were compiled by the Jamaica Library Association, for implementation in schools. There is room for improvement in accommodation facilities for school libraries and this has been brought to the attention of the authorities.

A junior secondary school programme for primary school leavers not going into high schools was established in 1969. Each of the 68 schools was built with accommodation for a library. These libraries are being supervised by teacher/librarians who are encouraged to take the library science courses which have been included in the curricula of at least two teachers colleges.

National Library

The establishment of the National Library of Jamaica and its co-ordinating role has already been mentioned, although its importance in collection, storage and preservation of the "national cultural heritage" cannot be overemphasised.

Public libraries

Since 1948 the Jamaica Library Service has played a major role in the communication process by provision of a free library service to the Jamaican population. It is administered by the Jamaica Library Board through its Headquarters and 13 Parish Libraries and therefore its service is extended to every corner of the island in approximately 450 service points which comprise Branch Libraries, Book Centres and Bookmobile stops. A free postal service operates for the benefit of those persons to whom the library is not easily accessible, and delivery vans penetrate those areas inaccessible by heavy bookmobiles.

This library service caters for adults and children of every level of the society and provides good research facilities, material for recreational purposes, special types of literature for certain categories of persons e.g. slow readers or persons visually handicapped, as also services to prisons and hospitals. These are but a few of the libraries' activities but worthy of note is its wide range of cultural activities for individual development as well as group involvement within communities. These activities also serve to attract the potential user to the library to enable him to avail himself of the many and varied services provided. An interloan service is available and excellent rapport is maintained with other libraries and institutions which creates the environment for the efficient transfer of information. As was earlier mentioned, it plays a supportive role in the provision of literature for JAMAL's new literates.

The Jamaica Library Service is not without its problems. Funding for new equipment, expansion of existing buildings and services, need for increased manpower resources, are some of the problems being experienced, but it is nevertheless a fine example of a library organisation in a developing country which endeavours to make information available to the society at large by communicating it through strategically based service points to reach the rural communities which are often neglected and which, in the case of Jamaica represents three-quarters of the total population.

Professional Associations

The role of the Jamaica Library Association in the field of librarianship in Jamaica, is a commendable one. Through its Executive Committee, several Working Parties and an active Schools Section, it has made outstanding contributions to library development in the island particularly in the field of library education as was evidenced by its involvement in the establishment of the Department of Library Studies at the University of the West Indies in 1971.

The Association attracts members from public and private library organisations and makes representations to Government on behalf of librarians in matters concerning the status of librarians and conditions of service. It has been instrumental in the compilation of a directory of libraries in Jamaica and more significantly, the compilation of School Library Standards which have been adopted for implementation by the Ministry of Education. Standards for College Libraries have recently been completed. There is no doubt that the Association has its role to play in the furthering of the development of the institutions vital to the communication of information.

Automation

In considering the role of the library in the communication of information in developing countries, we often think in terms of traditional methods of imparting information to the user, e.g. by provision of the literature through interlibrary loans. Our means of communicating information extends to types of communication such as the telephone, post office, cables, transport, but as we seek to improve ourselves we turn to other and more efficient methods of transferring information, in terms of speedy retrieval and transmission, and we find ourselves in the area of the new technology, which is vital to a national information system for rapid, effective nationwide communication of information.

When the Working Party investigated this area it discovered that although technology was being increasingly applied to industry, very little was being implemented in libraries and information systems, although several libraries have access to computer services. One system is already in operation at the National Library of Jamaica - the computerisation of the Index to the Daily Gleaner.[13] Alcan Technical Information Centre is also operating a periodicals routing system by use of a computer. The problems which Jamaican librarians are likely to experience in the move toward library automation, fall into the areas of personnel, equipment and finance. These

are discussed by Chan[14] who argues that while librarians "may not be expected to become fully-fledged computer programmers", they should be sufficiently informed about such systems and how they function by attending appropriate courses, to enable them to decide on the system most suitable for their purposes, and to have a voice in its operation.

The new technology will enhance, certainly not hinder the communication of information, but it is an area which will necessitate careful evaluation and the conducting of surveys, to ascertain the kind of systems which will be suitable for our purposes. On-line systems appear appropriate to the needs of Third World countries, but while one might be able to identify required articles, there are difficulties in obtaining copies of these articles when they are not locally available. The setting-up of computer services are costly and as they have to be purchased outside of the country, progress could be impeded owing to the severe problems in acquiring foreign exchange.

New developments

The framework for Jamaica's national information system has been laid, and successful implementation now depends on the availability of adequate financial resources. In recognition of the role of science and technology in national development, NACOLADS has attempted to have that network established as early as possible. The services of a consultant were acquired to advise on its establishment and efforts are currently being made to secure technical assistance for its implementation.[15]

Meanwhile the International Development Research Centre's (IDRC) Technical Assistance programme for developing the National Library of Jamaica and establishing and developing the Socio-Economic Information Network came into operation with the arrival of the IDRC Adviser, and a documentation centre is being established at the National Planning Agency - the network's focal point.

While we are busy organising information and trying to improve our methods of communicating it, we must ensure that our users are given the opportunity, through teaching, to exploit these resources to the fullest, because communication of information is a two-way process. I therefore close with the words of Borchardt,[1]

> "... if developing countries want to keep developing they must make sure not only that all citizens can read, but also that all citizens can use libraries."

REFERENCES

1. BORCHARDT, D.H. Aspects of library and information services in the framework of social policy planning. International Library Review 9, 1977: pp.403-412.

2. ARNTZ, Helmut. Planning of National Overall Documentation, Library and Archives Infrastructures Paris, Unesco, 1974, 44p.

3. HAVARD-WILLIAMS, P. Libraries and information in developing countries Paper presented at the 9th IATUL Conference on Libraries and the Communication Process, April 12-16 Lausanne, 1980.

4. ROBREDO, Jaime. Problems involved in setting up and operating information networks in the developing countries. Unesco Bulletin for Libraries 30(5) 1976: pp.251-254.

5. Intergovernmental Conference on the Planning of National Documentation, Library and Archives Infrastructure. Final Report. September 23-27 1974, Paris, Unesco, 1974, 65p.

6. ROBINSON, Joyce L. Jamaica, Libraries in Encyclopaedia of Library Library and Information Science. Vol.13. New York. Marcel Dekker Inc., 1975: pp.169-205.

7. JAMAL Foundation. Literature for new readers. Jamaica Library Association Bulletin, 1977: pp.14-16.

8. HARRISON, K.C. How Jamaica is tackling illiteracy. Library Association Record 78(11) 1976: p.259.

9. World Almanack and Book of Facts 1980. New York, Newspapers Enterprise Association Inc., 1979. 976p.

10. Jamaica. National Council on Libraries, Archives and Documentation Services. Plan for a National Documentation, Information and library system for Jamaica. Kingston NACOLADS, 1978. 83p.

11. SAUNDERS, W.L. The development of libraries as a key factor in communication. Proceedings, papers and summaries of discussions at the Public Libraries Conference, Blackpool. September 14-16, 1971. London, The Library Association, 1971. 65p.

12. JACKSON, Miles. Libraries and documentation centres and the communication environment. International Library Review 8, 1976: pp.361-366.

13. KAVANAUGH, Rosemary. The flirtation that is paying off. Jamaica Library Association Bulletin 1977: pp.39-41.

14. CHAN, Graham, K.L. Library automation. Jamaica Library Association Bulletin, 1979-1980: pp.31-33.

15. FERGUSON, Stephanie. The science and technical information network. Jamaica Library Association Bulletin 1979-1980: p.34.

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PUBLIC RELATIONS OF SCIENTIFIC LIBRARIES IN THE FEDERAL REPUBLIC OF GERMANY

Report of a Pilot Study of the Deutsches Bibliotheksinstitut, West Berlin (German Library Institute) Conducted at the Hessische Landes- und Hochschulbibliothek Darmstadt (Hessian State and University Library, Darmstadt)

Y. A. Haase

Ltd. Bibliotheksdirektor, Hessische Landes- und Hochschulbibliothek, Darmstadt, West Germany

1. Scientific Libraries and Public Relations

Scientific libraries are important establishments of the intellectual and cultural life of a country. In the Federal Republic of Germany, however, their public prestige and the general knowledge of their various services is quite low. For a long time, even librarians were of the opinion that anybody who does scholarly work, attends college, or tries to further his education in another way will find his own way to the library and use its services. They were wrong. Studies have shown that even frequent library users know too little about the many different kinds of information and services offered.

Public opinion still views the librarian's job as a very contemplative one, although it has greatly changed, and although the number of books and magazines that have to be acquired, organized, and made available has increased immensely. This negative image also has a bad effect on the administrations financing the libraries.

Therefore, the scientific libraries have of late been repeatedly asked to increase their public relations efforts so that a broader public takes notice of their tasks, services and problems. The libraries are willing to do so on principle. However, they know too little about the specific problems of

public relations for libraries.

2. A Project of the Deutsches Bibliotheksinstitut (DBI)

For this reason the DBI organized a project in 1978 that is meant to create the methodological preconditions for public relations in scientific libraries. One year before that the same institute had started a project for improving the public relations of public libraries. That project's aim is to find a standardized form of all kinds of public relations for the public libraries in the Federal Republic of Germany and West Berlin.

Such a standardization cannot be striven for at scientific libraries, because they often differ too much from each other in their history, organization and purpose. Instead, the methods are to be tried out in a model of local public relations at one library. The Hessische Landes- und Hochschulbibliothek Darmstadt has been chosen to serve as this model library, since it is almost equally responsible for the two most important functions of scientific libraries:

- providing literature for a city and a region;
- as a central library, providing literature for a university.

The project is financed by the Federal Ministry of Education and Science. Work on the project was started in June 1979. It is under the professional control of the library's director. An employee of the Deutsches Bibliotheksinstitut is at his disposal for the practical realization of the different tasks.

The project is under the critical guidance and supervision of an advisory board, whose members are librarians from different libraries, communication experts from the economic sector, from different cultural areas, and from the public administration. Aside from this, a yearly meeting is held in Darmstadt for public relations specialists of numerous large libraries from all over the Federal Republic, so that they can inform themselves about the development of the project and bring forward suggestions and requests on the basis of their own practical work.

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The realization of the project is planned to take three years. The results are to be published in a comprehensive concluding report intended to be used as a sort of manual by the scientific libraries of the Federal Republic, containing suggestions and instructions for the conduct of their own public relations.

3. Tasks and Mode of Operation

At the beginning of the project work a list was compiled of the topics that were to be tested in practical work.

Now, after more than half of the time alloted for the project has passed, work has begun on all problems. In some topical areas results have already been achieved (e. g. the development of a new emblem, close cooperation with the press, a system of signs for orientation), although these topics are still being experimented with.

Public relations of scientific libraries have two objectives: public relations aimed at the external public (3.1 - 3.6), and public relations within the library (3.7 - 3.9). It is also fundamental to use a corporate idendity.

3.1 The Emblem ("Signet")

The visual appearance in public is determined by an emblem. A survey at all scientific libraries of the Federal Republic resulted in the finding of three themes of library emblems: the book, the library building, and the initials of the library.

In Darmstadt, a graphic artist was given the task of sketching designs using these themes. He did so - and then he presented a fourth suggestion: "B'thk". This puzzle of letters is the result of a method not used in Germany but which is quite common in the English speaking world, of extracting the four most striking consonants of the German word "Bibliothek" (library). This "B'thk" is used as an identification symbol above the rather long name of the library (see enclosure). For the line between the symbol and the full name of the library he chose two shades of green, which are also

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to be used as identification colours within the orientation system.

This emblem fulfills all the important requirements it should: it catches everybody's attention - though it is also controversial, to be sure - and it is unequivocal and cannot be mistaken. It was presented to the advisory board and other groups who all voted for it by majority.

3.2 Cooperation with the Press

The public relations specialists of libraries complain again and again that the press takes so little notice of libraries, at best reporting about special events like the opening of an exhibition.

The local-news editors of both of Darmstadt's daily newspapers assured us in various intensive talks that the readers do want to hear about the library's general problems - but the problems do have to be made interesting and illustrative. Shorts news items have the best chances to get published and read. It is also important that the press is continuously supplied with news items.

For this reason, a group of employees has, for some months now, met weekly with the director at an appointed time in the Darmstadt library to consider which greater or lesser events are important enough to be published. The success of these meetings can be seen in the fact that in the year 1980, 132 news items about our library were printed.

3.3 Public Relations in the University

It has proved to be of special importance to better inform the university students of the library's services. Their using the library has to come natural from the beginning. Therefore the students are now provided with information material about the library right at the start of their academic studies. In addition, introductory tours are offered, and reports about the library appear regularly in both of Darmstadt's university newspapers.

3.4 Exhibitions and Other Cultural Events

Organizing exhibitions is the oldest and most popular, often even the only form of public relations of scientific libraries. Library exhibitions have two functions:

- they promote awareness of the library by presenting chosen items of its collection,
- by compiling literature and documents illustrating a given topic they stimulate the drawing of comparisons and contribute to the advancement of knowledge.

There is almost no limit to the topics a library may choose for its exhibitions. To give a few examples, here is a list of only the major exhibitions our library showed during the year 1980:

- theatre in Darmstadt
- the "Darmstädter Verlag" (history of a handpress)
- books from Poland
- the philosopher Hermann Graf Keyserling
- construction and history of sun dials
- modern book art
- manuscripts from the middle ages and valuable early prints.

In addition, there were numerous small exhibitions shown on our stair-case, commenting special current events.

In like manner, attention was drawn to the library's holdings and services by giving lectures, readings, concerts, and similar events.

3.5 Publications

By its publications the library, as a cultural institution, has a special impact. This form of public relations is also tested within the scope of the Darmstadt project - as far as the financial resources allow. Examples of different kinds of publications are:

- catalogs of exhibitions
- scientific research reports using the library's source materials
- publications about the history, function and special collections of the library

- bibliographies of the university's publications
- reading lists related to special events, e. g. to the theatre programme
- reproductions of valuable manuscripts and prints, also on such media as postcards and slide series.

3.6 Cooperation with Other Institutions

Many activities repeatedly offer the chance to cooperate with other institutions. In this way the respective interested parties are lead closer to the library. In Darmstadt, we take advantage of such opportunities whenever possible.

In the year 1980, such cooperation took place with the Darmstadt Technical University, the Darmstadt Public Library, the German Poland Institute, the Darmstadt State Theatre, the Society of Hessian Friends of Literature, and an art gallery.

3.7 A System of Signs for Orientation

The goal of public relations within the library is to reassure the user that he is welcome in the library. This feeling of welcome is intensified if he is made familiar with everything he needs to work with, so that he can find his way about the library fast and on his own. To achieve this goal, a uniform system of signs for orientation amd direction was developed for the Darmstadt library. This system helps the user to quickly obtain a general view of the library's various services and facilities, and it leads him directly to the wanted location. At the same time, this system is intended to relieve the librarian from answering the many routine questions and instead make him available for giving more professional information.

Right now this system is about ready to be realized.

3.8 Point-of-Use Instructions

Especially when using certain specific facilities of the library people need expert advice. But even there written instructions can be of valuable help. With the help of illustrative leaflets the person seeking information will be enabled to become familiar with the use of the respective facility

by himself. In Darmstadt, such point-of-use instructions are presently worked out for all important catalogs, information services, reading rooms, and lending modalities. In the drafting of their content and formal structure, we also make use of the materials of those scientific libraries that already work with such point-of-use instructions.

3.9 Information Bulletins for Users and Employees of the Library

Very often it is necessary to let the library users know about changes, news and innovations, and also about unavoidable difficulties in the library.Since the beginning of 1980, this purpose is fulfilled by a news bulletin called "LHB im Gespräch" ("Talking about LHB" - "LHB" are the initials of our library's name). It appears not regularly but as occasion demands and is distributed free of charge.

A similar bulletin for the purpose of improving the information flow within the library contains announcements that are of special interest and importance to the employees. The task of collecting and passing on such information is assigned to the same group that meets weekly for the discussion of press items.

4. Costs and Benefits of Public Relations

The Darmstadt project has the goal of creating the methodological preconditions of public relations of scientific libraries. Effective public relations are only possible, if the libraries are adequately supplied with personnel and funds. Every bigger library should have a specialist who spends at least half of his working hours on the tasks of public relations. Although additional funds are needed for this, these costs realize an effective profit, because they make it possible to get more use out of the high budget that is needed yearly for the upkeep of the library and the building-up of its collection.

B'thk

HESSISCHE
LANDES- UND
HOCHSCHUL-
BIBLIOTHEK
DARMSTADT

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FURTHER TO MY EGG: THE STORY OF AN AUSTRALIAN LIBRARY CAMPAIGN

Arthur Mortimer

Liaison Librarian (Social Studies and Accountancy),
South Australian Institute of Technology, Adelaide, South Australia

Illustrated by Simon Kneebone

I have the honour of belonging to CROW (Concerned Residents of the Western suburbs of Adelaide, S.A.). This is a story of urbane guerillas dedicated to the provision of better public library services throughout Australia. We CROWs strongly believe in the idea of the individual in Australian society growing in strength and power as his access to ideas, inspiration, and information becomes greater, and we believe that a strong national network of public libraries is essential for this process. In other words, CROW is of the firm opinion that Australia needs an intellectual "resources boom" to match our current mining one.

Our organisation arose in 1974 out of a widely-held feeling of regional dissatisfaction with our almost non-existent public library services.

To give a brief 'crow'nology. In Australian Library Week 1974 we set up the Levels Library at the South Australian Institute of Technology as if it were a community library and we got more than 300 people to travel the 12 miles from the Black Diamond Corner to contrast Port Adelaide resources poverty with Levels luxury. Then, in Australian Library Week 1975, we CROWs hired an old shoe shop -- because it had shelves in it! -- along Semaphore Road, filled it up with resources, and got a whole lot more people to check out some possibilities. These activities resulted in thousands of signatures to "prayerful" and "duty bound" petitions which a humble CROW sent off to our Australian Federal "Holy City" of Canberra.

THEY SAY IF WE DON'T GET A LIBRARY SOON...'
'WE'LL HAVE TO CANCEL OUR SUBSCRIPTION TO HANSARD'!
...AND WITH YOUR BIG SPEECH COMING UP TOO!
HANS. MAN.

Then, on April 1, 1976 - the date is significant! - the Horton Report into Public Libraries in Australia was handed to our Federal Parliament. And nothing happened, and went on happening. So we decided to stop being humble and to go in for some calculated community disorganisation. We proclaimed that CROW companies representative of the whole 250,000 of us would, in Australian Library Week 1977, clean the whole State Library out of books, cassettes and anything else that was borrowable. If you can drink a pub dry, we reckoned, then you can borrow a library empty. Anyway - at least this is CROW's version of history! - the thought of the Great Borrow proved to be too much for our State Premier Dunstan and he called a sudden election just before Australian Library Week 1977 -- and his very first election promise was to provide $2,000,000 for public libraries in the West! As a result we now have 11 public library services whereas we had only one in 1977. The trouble is that our library services are so embryo - a problem shared by many library services around Australia - that we need further sustenance and this, in CROW's opinion, can only be supplied by Federal aid, that is, by the implementation of the modest proposals of the Horton Report into Public Libraries in Australia, a report that our Federal Government has been steadfastly ignoring ever since it was presented to them in 1976.

We CROWs therefore resolved to continue. And we decided, early on, to fight as much as possible of our campaign out of children's books. So we wrote to Dr. Seuss, the author of Horton Hatches the Egg, and he said, in reply, "I and my friend Horton the Elephant are both very proud and happy to be of some usefulness to your library project, and wish it all the success that it so rightly deserves!" From that time on, to all intents and purposes, the egg became the report, and all our efforts were directed towards the hatching of the egg. As a result, we have used the joyful symbolism of the egg ever since -- as witness the sending of egg powder enclosed in an origami elephant in 1977 to all Federal candidates and the sending of chocolate Easter eggs to politicians last year. And once again, in 1980, CROW has sent some more egg mementos, this time in the form of illustrated and fertilised duck eggs, to selected Federal candidates -- the scenario of course being:

"Tweedledum and Tweedledee
Agreed to have a battle
For Tweedledum said Tweedledee
Had spoiled his nice new rattle.

Just then came down a monstrous
CROW,
As black as a tar barrel,
Which frightened both the heroes so,
They quite forgot their quarrel!"

Or so we hope! And, by now, there has been reposing for some time in each of the Canberra 'duckholes' of Fraser, Chipp, Hayden, Ellicott, and Ryan an egg, with a caricature and some words on it.

In the case of the Prime Minister, his words are really coming home to roost! They are from a speech he gave in 1969, as Minister for Education and Science, when he was opening the Library Association of Australia's 15th Biennial Conference in Adelaide. With the first paragraph on his egg every liberal-minded person in Australia must be in hand-wringing agreement:-

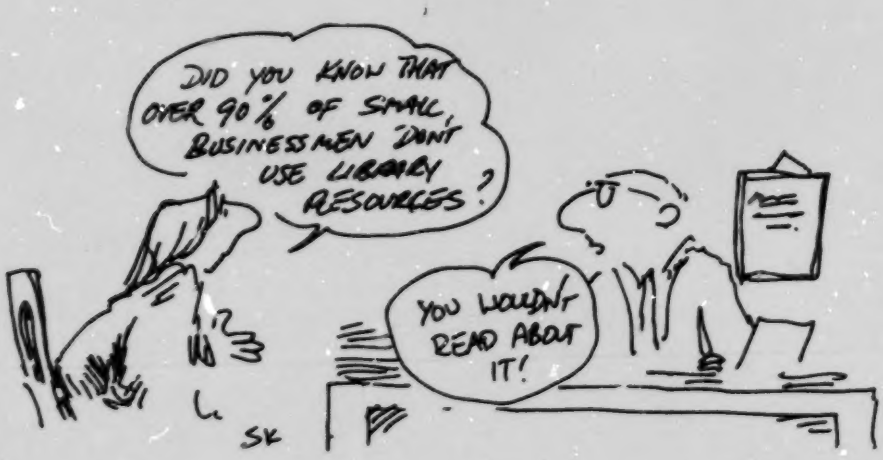
> "The things that really add something to progress", said Mr. Fraser, "are those which can add to the quality of life, to the quality of existence ... A good book, more, a good library, has a material value it is true, but it has a greater value in its contribution to the quality of human life".

In other words, life wasn't meant to be stupid! But then the Prime Minister went on to say, in 1969 -

> "If books and libraries are to compete in the kind of world in which we find ourselves, and in the kind of world in which we must live; if they are to be allowed to make the contribution to the quality of life which I know is within the possibility of things in this area, a more active advocacy for books and for libraries and what they can achieve is required, because the 20th Century does not permit passive salesmanship to succeed".

And Horton does indeed mention one alarming example of what looks like library passivity, in the world of Australian business:-

> "... great demands have not been placed on free State Library services by small businessmen", says Horton. "Of the 920 small manufacturers who recently responded to a questionnaire 1 per cent had approached the Research Service of the State Library of N.S.W. for advice on a technical or production problem 'most often', 3.4 per cent had approached it 'less often', and 95.7 per cent had never approached it at all!" (my emphasis)



From the above one does perhaps get a picture of underserving passivity --- introverted librarians whispering Uriah Heep-like secrets into the holes in catalogue cards is the usual stereotype. But all stereotypes are boring and most of them are untrue. There are dynamic librarians. Casanova was one -- admittedly after he had lost interest in other things!--; and Chairman Mao was in his early days a Deputy Librarian at the University of Peking. And there are plenty of dynamic librarians right here in Australia.

The real position is that all our Australian Public and State libraries are critically over-extended, understaffed, and undersubsidized to such a degree that they simply don't have the staff for a "more active advocacy" in the community - to quote the P.M. again. Our public sector libraries are flat out just dealing with the people who come in through the front door. Therefore, our Horton proposals must be looked upon, quite simply, as a rescue operation!

And rescue in the face of a tidal wave of public demands on all of our libraries, Public and State. Just take my own local CROW library --- one of those we "terrified" Don Dunstan into giving us! --- the Semaphore Public Library. When it was set up a couple of years ago in an old supermarket shopfront on Semaphore Road State Library officers calculated, from the population on our Le Fevre peninsula, just how many borrowers there were likely to be in 4 years time. In the event, their four-year estimate was broken in the first 5 months! Paul Hamlyn always says it is easy to sell books in an Age of Anxiety. But there is much more to it than that.

Another obvious factor leading to increased use in our little seaside public library is that of everyone's ever-increasing leisure time here in Australia.

But this is still only a partial answer. A survey in a recent issue (February 1979) of American Libraries has the answer. This survey puts paid to another tired stereotype, the old one of the typical library user as an inert, shy, passive bookworm. The data from this American survey tells us that -

> "Library use is most highly related to activity. An individual who is active in other aspects of life, whether it be community organizations, politics, work, or sports, is also likely to be a library user. Libraries are simply a part of the lifestyle of active people! (my emphasis).

Now, finally, let's get back to our five politicians in receipt of egg-letters. The two best replies we CROWs have received are: a charming letter from Senator Ryan, thanking us for her "hand-crafted egg", and a poignant letter from Senator Chipp:-

> "Thank you for your letter of 10th October ... Perhaps you might now tell me what do I do with the bloody egg?
> Warm regards,
>
> Yours sincerely,
>
> DON CHIPP
> Senator for Victoria"

I would have thought, having sat on it for so long, our politicians would know what they should do with our egg. After all, they are the only ones in the right position to hatch it!

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IF WE SIT ON IT - YOU MIGHT THINK WE'RE TRYING TO HATCH IT..
HORTON REFUSES
SK

****

WELL, THEY GAVE US A LIBRARY - IT'S A BRING YOUR OWN..
SK

TECHNICAL COOPERATION BETWEEN LIBRARIES AND THE ADVANCED SUBSCRIPTION AGENTS

Arnoud de Kemp

Swets Subscription Service, A Division of Swets & Zeitlinger BV, Lisse, The Netherlands

In view of this IATUL's conference theme "Libraries and the Communication Process" and especially today's theme "Communication with the World Outside", the best contribution we could make was to create a remote link with our computer in The Netherlands so that you would be able to communicate with an agent in a quite different way.

Thanks to Mr. T.J. Tanzer and his staff at the Ecole Polytechnique de Lausanne we could use a new terminal, installed for this conference, as well as library facilities for which we are grateful.
We hope that this opportunity to look into an advanced library subscription service system has also improved communication between librarians.

We have started this new and active dialogue at the Essen Symposium on Serial Automation, organized by one of the IATUL members, Mr. A.H. Helal, October 1980. As a result we have been invited to participate actively in several national and international conferences this year. In addition, some libraries have contacted us directly regarding specific automation developments in their own environment.

IATUL Proceedings, Volume 12, 1980, presented a report by Mr. Terry Waller, Project Development Manager, on the development, design and operation of the Swets system. Although new features have been added and many routines have been upgraded, the information given still stands for the system.

Today we would like to communicate with you about the cooperation between libraries and library subscription agents, concentrating on the technical know-how that agents may offer.

Agents literally stand between publishers and libraries, serving them both. The primary role of an agent was - and still is - a trade function: buying serial titles at the request of libraries.

A large majority of libraries employ one or more agents for the acquisition of traditional and (more and more) non-traditional material, such as micromedia, magnetic tapes, video, etc. With the advancement of facsimile transmitters and receivers, the development of databases and networks agents might also become active as suppliers of documents and data in general. This is an even lower margin business than serials already are.

The relationship between libraries and agents, but also between publishers and agents, is changing. For their own economic survival publishers tend to lower discounts to agents, with the exception of a few very large agents who actively promote and distribute their titles. Some publishers now better appreciate the agent's role as handling costs are being reduced by such cooperation, but other publishers might try harder to sell directly.

The main ingredient agents offer is service. Looking at the principles of serials management and the status of technical processing in libraries, we may expect that the library community will require an even larger variety in and a higher quality of service than is being offered at present.
Basic services will become more and more flexible, hopefully maintaining the current moderate price level. Special services will become more and more available as facility tools for acquisition, collection management and administration. To mention a few of our present specialties: the Swets Info System with detailed customer status reports and Three-Year-Subscription-Surveys with a detailed analysis of publishers' prices, currencies, and handling charges per subscription, per budget code, per subject field and per country of publication.

The economic aspect of the relationship between libraries and agents is changing because of the continuous sharp increase in prices, drastic currency fluctuations, effecting - especially this year - libraries buying US and British material from abroad, and the large number of new titles still being announced. On the other hand more and more titles cease or merge, but there is still a net growth.
Many libraries are or will be forced to rationalise their serials list with their budgets getting more and more tight. In this respect we are looking forward to a study of the use of periodicals at Chalmers University of Technology in Sweden, conducted by Mrs. N. Fjällbrant.
In addition, libraries might have to reduce staff costs.

In our view there will be need of a more intensive cooperation between agents and libraries, which goes beyond acquisition and covers the area of serials control. Manually this has already become a major problem area, partly also because of the high percentage that serials represent within most library collections. It is complex, labour-intensive and henceforth costly.

It has often been said that when these two aspects, labour-intensity and repetition, occur, automation presents itself. However, the actual recording of serials presents too many questionmarks to be solved by a straightforward automation. Serials are exceptional in their appearance and behaviour.

We now have enough experience to handle most problems. With the rapidly increasing number of periodical subscriptions that is coming in through our offices in the USA and The Netherlands (at present over 75,000), we had to automatize to a very high degree. But not all serials can be controlled fully automatically, e.g. irregular publications and several book series. Both offices work online. We check in by title, achieving a significant scale economy, and let the computer allocate the issues. Any necessary claims are immediately sent to publishers concerned. We can link with extensive purchasing records and are also able to claim from there. We consider this a real advantage when comparing our concept with the average automation effort in libraries.

This consolidated check-in system, in combination with a fully controlled distribution to libraries worldwide, by airfreight, is being offered more and more successfully. For libraries with either mail and/or staff problems and for those libraries that need to receive material from other continents as quickly as possible, technological support is available, whereby we (principally) calculate additionally at cost level. The price of this additional service, which we market under the name FAST ®, has gone down recently.

This is one typical example of a service that has been developed by us on request of libraries. There will be more. In the area of serials management, agents might be able to diminish clerical or at least non-librarian processing activities offering know-how, capacity and actual processing at a favourable cost level. It is up to you to guide us in developing valuable services.

We would like to conclude this short contribution with the old parable about the grasshopper, who decided to consult the wise owl on a personal problem. The problem concerned the fact that the grasshopper suffered from severe pains each winter. After a number of these winters, in which all of the grasshopper's known remedies were of no avail, he presented his case to the owl.

The owl, after patiently listening to the grasshopper's misery, offered a simple solution: "Turn yourself into a cricket and hibernate during the winter."

The grasshopper jumped away joyously, thanking the owl for his wise advice. Soon however, after discovering that this important knowledge could not be transformed into action, the grasshopper returned to the owl and asked him how he could perform his metamorphosis.

The owl said: "Look, I gave you the principle. It's up to you to work out the details."

DILEMMAS OF DOCUMENT COMMUNICATION

Axel Andersen

Head of Department, Royal School of Librarianship, Copenhagen

The information explosion of the last century has had profound effects upon the entire society: The number of publications has increased enormously and still seems to be accelerating. At present something like 60.-90.000 different journals of scientific, technical or other professional importance are being published, producing 3-5 million articles annually. In order to maintain a general knowledge of these immense amounts of documents it has been necessary to develop a modern library system and an improved cooperation between different libraries. In consequence libraries to-day are as much parts of an integrated network of institutions, as they are individual entities. Only by means of union catalogues and a narrow cooperation with a strong emphasis on the exchange of publications requested it has been possible to meet the challenges caused by the literature explosion and the parallel growth in number of requests.

Another important consequence of the rapidly growing number of documents has been the establishment and continuous development of new and improved bibliographic tools, starting with the foundation of the national bibliographies in the 19th century and the publication of subject and discipline oriented bibliographies in modern times - indexes, abstract journals and unconventional aids such as current contents journals and citation indexes. All these tools and the establishment of the international library infrastructure have been necessary conditions for the provision of relevant literature to users such as research workers and engineers in science and industry.

Computer technology has made a storage of bibliographic information in big, international data bases possible, and complex networks covering a broad field of subjects are now being established. Bibliographies, indexes and catalogues in their original paper-version are consequently disappearing and have, in fact, already disappeared.

Other sorts of literature are going to disappear too, being replaced by on-line accessible data bases. In France telephone directories are already disappearing in their traditional form now, and the same is seen

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to be the case internationally with types of reference books containing big amounts of homogeneous data, such as address books, sales catalogues etc. The question is whether the "literature proper" - books and articles containing a coherent text - is going to be computerised as well. Already in 1969 F.W.Lancaster predicted that a complete change to a paperless society should be completed in 1990, and as late as 1979 Chris. Evans advocated exactly the same point-of-view.

Other new media such as microforms, video disks, teletext, and videotex are part of the ongoing diversification as far as information storage and transmission are concerned. At the EURIM 4 Conference, Brussels 1980, a half-way status was made. John W. Senders on that occasion reported of an experiment at producing an electronic journal without any paper version at all;this experiment, that was sponsored by the National Science Foundation, was not a success, but it may be a matter of time when the technological difficulties in producing such a journal are overcome.

It must be emphasised that there is a basic difference between two groups of new media:

On one side we have the on-line media in a broader sense of the word. They comprise all sorts of communication of information from some, common central store to individual users who have a potential access to the stored information, usually by means of telephone or television communication. Users are dependent upon access to the base of information, and this means of course considerable practical restrictions compared with information accessible in conventional printed form. On the other side this group of media have great advantages, especially with respect to their big capacity and the possibility of constantly keeping these huge amounts of information up-to-date.

The other main group of new media are of an entirely different type, consisting of prepacked, immutable units of essentially the same kind as the conventional media like books, other sorts of printed media, microfiche, gramophone records, musiccassettes, and audio and video tapes as a whole. They are produced in a finished form which can in no way be changed, corrected or brought up-to-date.

Video disks seem to be an extremely promising new means of communication, especially due to its enormous capacity. One single video disk may contain 45.000 pages of text, or pictures - stills such as colour diapositives,

or shorter or longer sequences of pictures - for instance a whole motion picture with sound and music as well as pictures on the screen.

A Swedish government committee considering the possibilities of publishing a state-supported national encyclopedia in 1980 calculated that the content of a big, multi-volume publication of this sort can be packed in two video disks. The video disks are presumably being marketed in Europe within 2 or 3 years.

In the U.S. experiments are recently being performed, aimed at storing the text of entire books (The Bible, Huckleberry Finn) by means of microprocessors to be used in conjunction with a reading plate device on which the text can be blown up. Microprocessed books belong in principle to the same category of prepacked, finished products as their paper-version predecessors. They are still in their experimental phase but may very well have a considerable impact upon the entire communication market - and of course the graphic industries in particular - in the second half of this decade.

The accelerated expansion of the research sector has been accompanied by a corresponding growth of the information sector in general. Scientific and industrial results should be communicated to the international public as quickly as possible. Some consequences have already been mentioned: An increased publishing activity, the development of tools for a bibliographic control, and the establishment of a library system, all of them instrumental in the effective dispersal of information in document form.

As far as libraries are concerned the main task has not so much been the acquisition of new literature (which is certainly a tremendous task itself), as it has been the organisation of optimal information retrieval systems, i.e. indexes, catalogues, bibliographies, and data bases, that might ensure the maximal and best possible retrieval of documents dealing with a given subject. In spite of all measures taken in order to improve professional communication, scientific society to-day is facing a tremendous problem of abundance.

Basically libraries always attempt at integrating the documents acquired in such a way that it is possible later on to retrieve all relevant documents. Classification is crucial in this context, and the establishment of most information retrieval systems involve classification, for instance in the production of a systematic catalogue, or a dictionary catalogue.

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The big problem facing all librarians and indexers is the continuous obsolescence eroding all classification systems and systems of science. They are all reflecting the philosophy of their time, the Weltanschauung of the age in which they were constructed.

Comprehensive investigations have demonstrated, that the average, conventional library system assigns 1,4-1,5 subject references to each document. In modern computerized information retrieval systems a more exhaustive indexing is being performed, and the average number of subject entries per document (articles dominating) is roughly ten times as big as in conventional card catalogues; it means somewhere between 14 and 20 descriptors or other subject headings per document.

Comparative studies of a number of information retrieval systems unambiguously indicate that <u>all</u> the systems seem to suffer basic dificiencies, no matter if they are conventional or computerized. Apparently it is <u>not</u> possible to construct a perfect system: The Cranfield experiments show quite clear that the ordinary IR systems have a recall on 70-90 % of the relevant documents contained in the collection. Their precision is, correspondingly, 20-8 %; in a few, highly sophisticated systems precision is considerably higher. All this certainly cannot surprise experienced librarians. But on the other hand it has aroused considerable attention that the experiments indicate a clear correlation between recall and precision, to the effect that an improved recall is accompanied by a reduced precision - and vice versa. In other words: Improvement on one side is followed by loss on the other.

Ongoing research seems to confirm that there are limits to information retrieval performance. It is probably not possible to improve information retrieval beyond a certain point. But several factors affect this performance, and it is, therefore, difficult to establish those limits. Besides the quality of information retrieval systems, relevance assessment, and variations with respect to question formulation and reformulation, are important factors. And taking formulation of questions into consideration user studies may consequently contribute to an improved clarification of this important question. An analysis of the main types of search situations, and further investigations of the rôle of the human intermediary - librarian/documentalist - in the communication between documented information and human needs may also be useful in improving retrieval procedures by the aid of information research.

In almost any field, subject or discipline one can observe that the amount of literature is far too big to the reader. It simply cannot be absorbed, because it surpasses the needs, demands and capacities of the reader. The mass of documents relevant in the given connection is simply overwhelming. Consequently it is in most cases senseless to initiate a document retrieval in a given subject with the express purpose of procuring everything published on this subject. There simply exists too much. For this reason search profiles have to be restrictedas much as in any way possible. And even then we are very often facing an abundant literature so we are forced to put an upper limit to the number of entries we can accept - for practical reasons. This introduction of a purely quantitative upper limit is, in fact, just another way of giving up the maintenance of the bibliographic control.

The explosive growth of literature has created a problem of abundance which cannot be solved by means of data bases and computerization alone: First the data bases usually give far too much information - too many references compared with the needs and capacities of the users.

Second the very lack of redundancy of the output is at the same time a strength and a weakness seen in relation to the actual search situations: Apart from very specific subject enquiries performed by research workers, technicians and other experts, the great majority of typical document search activities are best characterised by the facts that the users do not at all want the entire mass of existing literature on a given subject. On the contrary: Users want to get one or a few, properly selected articles relevant in the given context. It is, consequently, highly important that user studies dealing with such badly defined search situations are being performed. They are, indeed, extremely common in public libraries with their mixed, and entirely heterogeneous clientèle. User studies of this kind could therefore reasonably be initiated in this type of libraries (conf. T. Johansen, P.Ingwersen and P.Timmermann, 1980, and Anneliese Mark Pejtersen, 1980).

Until recently user studies in information science have primarily focused upon users and needs within comparatively well-defined frameworks: Studies have almost exclusively been dealing with scientists, engineers, and other specialist groups, i.e. people with a common and rather homogeneous professional education and a strictly defined, usually rather narrow field of interest. Furthermore, investigations have as a whole concentrated on the communication of information by the aid of advanced, computer-

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ised systems, and they have only sporadically dealt with conventional user-librarian dialogues.

Specific search situations of this kind can, moreover, be characterized by the large number of documents (especially articles) being retrieved, as well as by an explicit demand of the user to obtain an over-all, if not complete, view of the entire literature dealing with the subject in question. The persons in charge of this type of document communication are usually documentalists or research librarians with a university degree or some other equivalent theoretical background.

This advanced type of search - or rather: research - procedures are, however, not at all typical to the big and quantitatively entirely dominating number of questions arising from users in libraries of any kind. Students and "man-in-the-street"-borrowers are in several ways in extreme contrast to the research workers with narrow, advanced, and well-defined questions.

The extremely rapid development that has taken place in the field of information technology and information retrieval systems makes this bias quite understandable. It is, however, highly important - for the advancement of information science as well as for the improvement of the library practise as far as service to readers is concerned - that new approaches to user studies are being introduced in order to obtain a broader understanding of the basic factors 'use' and 'needs' than we can possibly get by means of the mentioned, well-established investigations in user studies dealing with a very small and special clientèle. It is necessary to expand the field of research, especially with contributions which can shed light upon the huge majority of rather simple and for several reasons badly structured search situations. They are, indeed, most predominant in public libraries, especially in the smaller units, but their rôle is by no means unimportant in research libraries and in libraries serving institutions for higher education: As seen in contrast to the rather homogeneous users in the group of specialists, public libraries as a whole are characterised in serving an extremely heterogeneous group of readers - children, young and old people, persons of all sorts of occupations, students, handicapped, immigrants, unemployed, uneducated, etc. etc. Most striking is maybe the enormous differences as far as their educational background is concerned. But the search situation is of course very much influenced by the very size of the document collection at hand in the library.

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Some attempts have recently been made at attacking the user studies from this angle - the public library aspect so to say. This goes for subject-oriented searches as well as inquiries concerning fiction - reading of novels etc. It is certainly not surprising that these badly structured user interests have been left untouched until recently. They seem to be more difficult to analyse than search procedures in fields of science having a well-established, fully fledged terminology and system of concepts.

Even if this distinction between advanced, professional users on one side, and the non-professional users of the public libraries on the other, even if it is obvious and to some degree justified, it may nevertheless be misleading: probably we should rather choose to consider the in-depth search as exceptional, and the more "superficial" (and consequently highly selective) approach to literature as the predominant, all-important type. They are so, not alone so far as public libraries are concerned but also for the other, more specialised document-communicating institutions.

The study of communication processes in information retrieval and in libraries can be a direct benefit to teaching and training. This includes the training of librarians and information officers who are mediators, and the training of users. User training is ofter performed by libraries without any coordination with other study activities. Training in library use should be closely connected to subject training, because the subject knowledge in terms of terminology and overview off the field is a prerequisite for meaningful search procedures. In the educational field there is a well established connection from teaching practise over teachers' training college to educational psychology and further to psychology and sociology.

In library training and education in information retrieval there is a similar link through information science to linguistics and sociology. But the link is weaker and information science has mainly dealt with problems concerning communication of scientific and technological material and retrieval tools with emphasis an computer retireval, automatic indexing etc. Research on communication processes in the humanities and not least in the public library sector is far more scarce.

Traditionally there has been a link between information science and linguistics. We have found that theories in cognitive psychology and psycho-

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linguistics may explain many phenomena in search processes and communication processes. There is also a mutual influence between linguistics and psychology on one hand and computer science and artificial intelligence on the other. The parts of artificial intelligence dealing with question-answering systems, automatic translation and problem solving may develop in a way that could have a profound influence on information retrieval and reference work.

In recent years a cognitive viewpoint or cognitive science has developed in the different scientific disciplines as a unifying force. In educational psychology this has been advocated by Ausubel and Novak. There is good reason for exploring this trend in information science and library work.

References:

AUSUBEL, D.P. Educational psychology. A cognitive view. New York, Holt, Rinehart and Winston, 1968. 685 p.

BEATTIE, G.W. Cognitive psychology and conversational analysis: their application to user-librarian negotiations and information search procedures. Social Science Information Studies, 1981 (1): pp. 121-126.

INGWERSEN, P., JOHANSEN, Th., and TIMMERMANN, P.. User-librarian negotiations and search procedures: a progress report. In: Harbo, Ole and Kajberg, Leif.ed. Theory and application of information research. Proceedings of the Second International Research Forum on Information Science, 3-6 August 1977, Royal School of Librarianship, Copenhagen. London, Mansell, 1980, pp. 160-171.

INGWERSEN, Peter, KAAE, Søren, TIMMERMANN, Povl, and JOHANSEN, Thomas. User-librarian negotiations and information search procedures in public libraries. Analysis of verbal protocols. Final research report. Copenhagen, Royal School of Librarianship, 1980. VI, 117 p.

PEJTERSEN, Annelise Mark. Design of a classification scheme for fiction based on an analysis of actual user-librarian communication, and use of the scheme for control of librarians' search strategies. In: Harbo, Ole, and Kajberg, Leif, ed. Theory and application of information research. Proceedings of the Second International Research Forum on Information Science, 3-6 August 1977, Royal School of Librarianship, Copenhagen. London, Mansell, 1980, pp. 146-159.

PEJTERSEN, Annelise Mark. Investigation of search strategies in fiction based on an analysis of 134 user-librarian conversations. IRFIS 3 (3rd International Research Forum in Information Science). Copenhagen,

BEST COPY AVAILABLE

Royal School of Librarianship, 1979. 16 + 10 p.

SENDERS, John W. The electronic journal. Paper presented at the EURIM 4 Conference. Bruxelles, Aslib, 1980. 5 p.

TIMMERMANN, Povl. A study of search procedures and user-librarian negotiations in public libraries. In: Ninth Anglo-Scandinavian public-library conference on public libraries and their user/non users. Hindsgavl, Denmark, 13th-17th May 1979. Copenhagen, State Inspection of Public Libraries, 1979, pp. 63-72.

NOVAK, Joseph D. A theory of education. New York, Cornell University Press, 1977. 295 p.

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A COMPUTATIONAL LINGUISTICS APPROACH TO CONCEPTUAL INFORMATION PROCESSING

Dr. Inger Bierschenk

Research associate. Dept. of Educational & Psychological Research,
University of Lund-Malmö, Sweden

Introduction

The purpose of this paper is to present a linguistic model which can be used for the processing of scientific information. The model has developed through several years of research and experiments in information mediation, structuring, organisation and dissemination in such social and humanistic sciences that have been of interest to Swedish educational research departments.

It has been apparent that a so-called "information overflow" and "information explosion" are irrelevant concepts to designate the state of affairs. There exists an ever growing data flow but a considerable lack of information, for example among many professional categories requiring information, such as university teachers and researchers. This so-called "information frustration" is likely to depend on the meaning an individual abstracts or infers from the data, e.g., in the interpretation of concepts and conceptual relations mediated in document titles. In computerized IoD search strategies there is a more serious barrier involved. If the logic of the computer or the system is unknown, there is a high risk of uncertainty as to the real existence of the documents, which makes for an abstractness of an even higher order. Moreover, when the information mediator conceptualizes in a way different from the searcher, which is often the case in social science research, it will prove difficult to arrive from data to information.

There are many science fields dealing with information, e.g., library science, information science, artificial intelligence, computational linguistics and the emerging field of cognitive science. All of them are concerned with the study of mechanisms that make possible representation of information derived from symbols. Since computational linguistics focuses on the study of language use aided by computers, there exists a link to

library and information science. For two or three decades great efforts have been made in the field of linguistics, especially its computational variety, to meet the needs in information science of structuring and deriving meaningful results in the processing of information. One basis goal for IoD systems should be the dynamic structuring, since information is characterized by the structuring and re-structuring of data, and thus subject to constant change. But there are strong traditions in linguistics as well as in library science, which seem to survive, despite the new technology of the electronic revolution. In fact, the symbol handling machine contributes to the conservation of this tradition. In the following I shall try to explain the reason why by means of some general principles governing the structuring of information.

Some principles in the structuring of information

There are different forms of representation with different goals. If the goal is, as it was once in the history of library organisation, to store "all" documented (written) information available, it seems natural that a philosophy of universal classification lies behind the structuring of the items. A well-known and common type is made up of the principle of hierarchy. Such a system has only a small potential for quick and easy adaptation to a particular structure in looking for new information. Concretely, once a book is put on a shelf it is bound to its place. A more flexible organization is provided by facet classification, through the lateral relationships made explicit.

Recent efforts to structure information have been made through different kind of networks. The starting point was Ross Quillian's[1] memory model assuming that human cognition is associatively structured. The so-called semantic network builds on concepts, represented as node labels which have links to their attributes (properties). In information search systems these networks are used in answering questions about facts in a data base. Such a fact, e.g. a property of a certain concept, may not directly lead to an answer to facts about a concept of higher order.

Later constructions of semantic networks make clear that this representation is founded on the classical-philosophical way of structuring the world, similar to generic and other lexical-semantic relationships. It may therefore be called static. Thus the network principle is based on relationships within each concept. The structure does not account for contextual relations such as they emerge in natural language sentences, i.e. the dynamic proper-

ties of information. An attempt in this direction is the PRECIS system which tries to build in structural relationships in the coding but still seems to rely very much on traditional classification principles.

In computer science, especially among those artificial intelligence researchers dealing with data base management, there is a trend to use the network principle in a restricted frame or context by the construction of so-called topic hierarchies[2] in order to prevent the associations from "exploding" in the information search procedure. The AI researchers are mainly developing mechanisms for logical deduction, i.e. the application of rules of inference to statements made in a formal language, whose "semantics" is well specified. Thus since the intelligence of the computer is restricted, dynamic structuring is not possible. It is an automatization of the philosophy and logic built into classic information structuring, and, unfortunately, the analogy made concerning theories of the structuring and functioning of human cognition is one main reason for the maintenance of the traditional reasoning in the construction of information processing systems.

Simultaneously, another view of structuring, the schema principle, is discussed among researchers in cognitive psychology. This model emanates from Sir Fredric Bartlett's statements on the human memory as a propositional structure[3]. As opposed to semantic networks whose organizers have to account for how many "semantic primitives" are needed for a synthetic formation of concepts, a structure based on schemata tries to explore the advantages of an adaptively operating process. The schema utilizes the relations between abstractions. This means that information need not be explicit as in the network, but implicit, i.e. embedded in the structure.

Formats of representation

From a linguistic point of view a model based on propositions would be represented as a $Noun_1$ -v- $Noun_2$ model, or in its more logical variety, as a predicate-argument statement: $v\left[N_1, \ldots\right]$. This representation format is often used in the processing and computing of natural language data. The inferences are then drawn to the semantic or the logical structure of the text. The text is in these cases one sentence. However, when the purpose is to inform about a sequence of events, as e.g. a scientific process, a process oriented model is required. For Indo-European languages, the Agent-action-Object paradigm seems to be general. This model is dynamic and takes direction and intentionality into account and can be used in psychologic studies of information processed from whole texts[4]. By means of the

AaO model latent dimensions in the information structure can be detected[5]. Inferences are made to the relational structure between concepts and conceptualizations.

Theoretical starting-points for an information processing experiment

Starting with the assumption that the document title is the first and often only contact an information searcher has with a scientific text in the process of judging its content, its language structure would be conceived as being the communicative surface between author and reader. This intermediate language is in the experiment assumed to represent an abstraction of all "scientific events" reported in the text as a whole.

If scientific reporting is concerned with establishing causal connections between events[6], these should be detected by means of a model whose components are assigned variables representing scientific entities instead of linguistic or psychological ones. Such a model has been developed by the name of the Problem-method-Goal paradigm assuming these concepts being central to research work[7]. The PmG model thus represents an abstract proposition and as such its characteristics differ in operationalization from more natural-language adapted models. This may be illustrated with an example from a transformational stage. From an interview about research there could be a statement like

I have analyzed titles for several months (1)

where the researcher is present (I) and tells about a process that has happened (verb forms) and also for how long time. When the same author writes a report about his research the time specification will not be present in the title (there is no "here and now") and his person is implicit:

An analysis of titles (2)

A transformation has taken place. In order to mark the object of his study the preposition "of" functions as pointer. The activity has been transformed to one concept designating some kind of research or investigation method. Since research does not handle concrete object but instead problems, it is appropriate to change the label "object" in favour of the label "problem". Thus m and P have been discerned. The G component is marked through the preposition "for". There is also an optional component in the model when a research instrument is involved. The preposition to mark instruments is "with". This is described in more detail in I. Bierschenk[8].

The operationalization by means of an algorithm that automatically codes titles in accordance with this conceptual information structure builds on a few but general principles. I believe that these principles can be used to explain the processing of natural language and the procedure of mediating information between man and the machine. If the interpretation of language data is based on cognitive functions such as they are studied by cognition oriented scientists, much of the confusion between the outcome based on formal logic and the logic of conception may disappear.

Among others, Piaget and Inhelder[9] have made extensive experiments showing that human cognition seems to be spatially organized. The child's conception develops from a simple demarcation of objects to an understanding of two-dimensional relations of several kinds. Adults learn to relate multidimensional phenomena and seem to use these organizing principles in a kind of coordinate system for the orientation in space and time. The basic hypothesis underlying the algorithm is that there are cues in the intermediate structure of the scientific title that relate the concepts and organize them in such a way that a cognitive structure can be detected (i.e. re-cognized). The prepositions are therefore used here as functors, structuring the scientific conceptualization by means of an unambiguous organization. Based on the intentionality of the PmG model and the visually signalled explicitness of conceptual demarcation the following computational linguistic model has governed the algorithmic analysis.

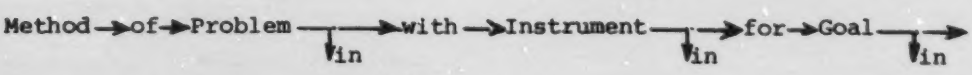

Figure 1. General principles of an algorithm for conceptual recognition

Some prepositions point to concepts, indicating the direction (intention) of the research activity (here called "intentional" prepositions). Others procedurally demarcate, i.e. give an explicit specification of the concept in question. This algorithmic definition of the relationship has created the name "extensional" prepositions. A more thorough discussion is found in I. Bierschenk[8], where also the rules for decoding at several levels are listed and described.

Patterns in an experimental data base

For the testing of the algorithm a representative sample of 9,000 bibliographic descriptions has been used. The sample is based on a definition of "researcher". Works produced of these researchers constitute the scientific title collection.

According to the analytical model employed, the conceptualizations (as represented by positions in the schema) may be extended in varying degrees. Experimental results show that the most characteristic feature in this science field is the Problem component, single or with one extension. Because of the intentionality inherent in the model, this pattern should be interpreted as expressing an implicit intentionality. If two components appear it is most likely a Problem and a Method. The presence of the method should be interpreted as an explicit expression of intentionality, as in research itself. The more complex the patterns are the less often they appear. There also seems to be a tendency that many extensions prevent "transitions" between components.

A validation of this conceptual structure has been performed by correlating the pattern types with types of document. For example, textbooks and other kinds of monographs are less complex than formal articles, which in turn are less complex than research reports. Thus three general structures appear in the material, namely (1) explicit intentionality, (2) implicit intentionality + second degree extensionality, and (3) explicit intentionality + first degree extensionality.

Conceptual information in scientific titles

Apart from some titles (about .005%) with a low abstraction level compared with expectancies and structural logic built into the algorithm, the conceptual decoding has resulted in some data registers (files) corresponding to the various components of the model. These registers are now funcionally related to each other because of the non-philosophical classification. The schema model as a structuring principle also reveals such dimensions that a manual analysis could have performed only with difficulty. To illustrate the difference I would like to discuss the title

Integration of children with handicaps (3)
m P I

According to the model "children" is the problem dealt with in this study and the methods and techniques are abstracted in the concept "integration": the different steps to take are not explicit. A linguistic analysis, when the interpretation model is anchored in natural language variation, would regard the with-phrase, i.e. the concept "handicaps" as associated to "children", which classifies it as a property. The research-oriented information model, however, assumes this property to be instrumental. In reality, this should be the reason why the author expresses or explicates the instrument. It is likely that the integration methodology is different

for those children. Therefore, it was of special interest in this report.

The schematic generality, because of the fixed positions of the components detects the variability, i.e. the variations among the values assumed under each variable. Thus "integration" can be a practical way of handling the children and also a method of study. Examples of variability of methods generated are "research" (incorporating several actions), "reflections" (a way of reporting one´s result), "handbook" (a kind of methodological strategy in educating research students). Consider also

Goals for teacher training Goals in teacher training (4)
m G P

The concept "goals" is a method in the first case, representing activities among these researchers involving goal description. It has a clear methodological meaning within educational technology in which teacher training is the overall goal. The preposition "for" recognizes the first "goal" as a method, whereas the preposition "in" codes it as a problem, since an explicit intentionality does not exist in the second case. Thus goals in teacher training just specifies the context within which a certain problem is dealt with. That "goals" is a noun is not of any import in the funcionally oriented registers. The author may discuss the same goals in the two titles, but from different viewpoints, from different functional domains. This also makes the following title functionally communicative to the information searcher

School for the 80´s (5)

It was written 20 years ago when the 80´s still belonged to the future. The Method component is here given a broader meaning, since the school may also be seen as an instrument. Method and instrument are components which can form method-(instrument)-goal hierarchies in relation to the degree of complexity in the desired goals. In order to reduce method and instrument to a simple concept the term "means" is used. In the light of the theoretical assumption and knowledge of this authors activities and field of inquiry in Swedish educational research, I believe that the proposed interpretation can be validated.

References

1. QUILLIAN, R. Semantic memory. In: Minsky, M. ed. Semantic information processing. Cambridge, MIT Press, 1968, pp. 216-270.

2. SCHUBERT, L.K., GOEBEL, R.G. & CERCONE, N.J. The structure and organization of a semantic net for comprehension and inference. In: Findler, N.V. ed. Associative networks. New York, Academic Press, 1979, pp. 121-175.

3. BARTLETT, F.C. Remembering. A study in experimental and social psychology. London, Cambridge University Press, 1932.

4. BIERSCHENK, B. & BIERSCHENK, I. A system for a computer-based content analysis of interview data. Lund, Gleerup, 1976.

5. BIERSCHENK, B. A new approach to psychometric problems in the analysis of pre-numeric data. Didakometry, 55, 1977.

6. SAGER, N. Perspective paper: Computational linguistics. In: Walker, D., Karlgren, H. & Kay, M. eds. Natural language in information science. Stockholm, Skriptor, 1977.

7. BIERSCHENK, B. Perception, strukturering och precisering av pedagogiska och psykologiska forskningsproblem på pedagogiska institutioner i Sverige. /Perception, structuring and definition of educational and psychological research problems on departments of education research in Sweden./ Pedagogisk-psykologiska problem, 254, 1974. /In Swedish/

8. BIERSCHENK, I. Intermediate language structure. A method for the generation of a language for representing scientific information. Ph.D. Dissertation. Göteborg, Department of Computational Linguistics, 1980.

9. PIAGET, J. & INHELDER, B. The child´s conception of space. London, Routledge & Kegan Paul, 1956.

COMMUNICATION SKILLS: THE ROLE OF THE LIBRARY SCHOOL

B Meakin

Lecturer, Department of Library and Information Studies,
Manchester Polytechnic

The Communication process is the theme of this conference and all the indications are that it is becoming increasingly necessary for the librarian to be an active communicator, au fait with a wide range of communication skills. As society becomes more dependent on, and receptive to, more sophisticated means of storing and disseminating information, so must those responsible for the utilisation of this information, librarians and information scientists, become more ready to facilitate access to information. Information, data, knowledge, whatever we call it, is of no use unless it is being processed by a human mind, and it is our function to get information out of store whenever necessary, and to bring our minds and those of others to bear upon it. Information is one of the few raw materials which there will never be any shortage - it is a resource which we have so far scarcely begun to exploit!

Information is being generated in ever-increasing quantities and the librarian is at the very centre of this process - we have the objective of dealing with these vast outputs of information, of controlling, organising and disseminating them. With a few exceptions, librarians have resolutely avoided facing up to this responsibility - we have been content to remain passive in our own little niches within whatever system we are part of, occasionally moving to a similar niche in another, comparable system. We have been happy by and large to fit in with society's conception of the librarian as an eccentric introvert or a passive creature fit for stamping books and imposing silence, and not much else.

Western society has entered a new, dynamic phase, where computerised techniques of information processing are commonplace, and library services are no exception to this. Where we have gone wrong is in our failure to adapt ourselves to more positive and outgoing techniques, and to be trapped despite a veritable plethora of professional writings within a public and personal image exemplified by the following quotes:

"But that's not man's work"
"You are much too bright to work in a library"
"It's not a job with a future"
"It's a good clean respectable job"

"Librarians are fuddy duddy book archivists in a bibliographic groove"
And, let us not forget the all-time classic:
"Surely you don't need a degree to stamp books" [1]

We cannot all be extroverts, but we can develop enthusiasm and social skills, and that is what we are trying to foster at Manchester. If in a working environment we can lighten the atmosphere, and make our users more willing to approach us and to relate to us, then we are beginning to create better conditions for a freer flow of information, and are also beginning to improve the quality of life. We cannot hope to make contact with users, nor can we expect them to want to make contact with us, if we give out signs saying "do not disturb". If we give this impression, then people will not do so, but neither will they have the easy access to information which we can provide, and which we should be committed to providing. Consider for a moment how you might feel in a shop or public building where the staff were rude, surly, unhelpful, truculent and generally uncommunicative. You would be unwilling to go to such an establishment again unless it were absolutely necessary and, by the same token, many potential library users are reluctant to use libraries.

For various reasons, we should be trying to increase library use and library effectiveness, and one of the basic factors in this increase is a heightened commitment to communication on the part of librarians. Some librarians will never acquire such a commitment, but it is becoming more and more necessary for new entrants to the profession to be able to communicate easily and effectively with a wide range of colleagues, and with members of the community. A library service which is disunited cannot serve its community, whether public, academic or special, to maximum potential, if its members are at odds with each other. If there is ineffective communication between the individual librarian and subordinates, peers and superiors, objectives of the organisation will not be clear, and its potential for service will not be maximised. If, for instance, library assistants are not told why they are expected to perform certain tasks (such as routine clerical duties), and how such tasks fit into the work pattern of the organisation, they are bound to feel sceptical about the purpose of these activities. A little justification and explanation goes a long way towards improving attitudes and understanding, also standards of efficiency and service.

Previously, library schools have concentrated heavily within the college setting on the more academic aspects of librarianship, and not so much on the practical side. It used to be thought that students would acquire all

the practical communication skills which they needed during periods of fieldwork, and within peer groups. There was considerable polarization of staff and student positions. Library schools now realise that in a society which is undergoing social change, a society which our trainee librarians will serve and contribute to, there must be a much stronger commitment to communication not only on the part of the students but also, and this especially, on the part of the staff. At Manchester, we have tended to eschew the 'ivory tower' syndrome, realising that the system will always preserve the lecturer/student relationship to some extent, but nevertheless opening channels of communication and consultation, by simply taking a human as well as a professional interest. The library schools are the only meduim through which all prospective entrants to the profession pass - it is here that the effort to consolidate and develop skills of communication must be concentrated, because never again will student librarians have such potential for inter-action, for exchange of views, for ranging across the whole spectrum of librarianship within the context of Western society.

For reasons of image, and because of the type of recruit we have had to the profession, there has been a tendency on the part of individual library school students towards introspection. It is depressing, and almost frightening, that many references still use terminology such as "Miss Smith is quiet, thoughtful, introverted; she likes reading and in my opinion is ideally suited to a career in librarianship". Maybe she was ideally suited twenty years ago; she certainly is not now! Students are expected and encouraged to communicate and to participate - we do our best to fill in the human dimension of the organisation and situations concerned by attempting to explain not just <u>how</u> something is done but also <u>why</u> it is done.

Library schools are essentially practical institutions - they must fulfil a pragmatic and dynamic role, and must show initiative and awareness in looking at practical problems and their solutions. Any library school which is doing its job should be creating an atmosphere of enthusiasm and commitment, where training for the profession takes place at a variety of levels, not just in the classroom. Enthusiasm cannot be conjured out of thin air; it must be present in the staff of the library school, who are in a position of considerable power and responsibility. If we are bored and disinterested, then the students will be similarly disenchanted and demoralised. By contrast, if the staff of any library school are not just time-servers, but are enthusiastic professionals; ready to communicate with, to assist and to stimulate students then there is still hope for our profession. Attendance at a library school has tended to be seen as a

formality - it should be seen as something positive and rewarding, a mutually beneficial process for students and staff alike. Given human nature, there will always be a proportion of students, and staff, who are content to remain on the sidelines of the profession, but the more this can be reduced to a less significant minority the better. One cannot help wondering about the motives of such people, but given the flaccid image which our profession has had in the past their presence within the profession is explicable if not exactly cause for jubilation. It should be a commonplace that the schools recruit staff who have a certain degree of involvement and enthusiasm as well as the more formal qualifications, and by the same token it is incumbent upon us to recruit students who have a similar, if less highly attuned, basic interest in the profession and its need to communicate as never before with the community and with other areas of professional activity.

There is an ongoing debate among staff of library schools over the essence of library and information studies and the provision of a comprehensive framework to integrate the various areas of study. At Manchester, the basis of both the undergraduate degree and postgraduate diploma courses can be taken as 'communication studies'. In devising the first CNAA (Council for National Academic Awards) degree, which began in 1970, a paper called Communication of Information was included as a base for the whole course. In the revised syllabus (1975-1980), the opportunity was taken to expand this to a double paper (Communication 1 and Communication 2), which has now evolved into Communication of Information and Documentation of Information. (1980 -). When the CNAA Postgraduate Diploma course was designed, the Communication paper was intended to perform a similar function.

In considering a foundation for library education it is suggested that two major factors are the idea of librarianship that exists among staff and in the profession generally, and the particular inclination of the staff in each institution. The view of librarianship which sustains the communication studies approach is that of librarians as mediators or facilitators of communication, and as managers of people. The essential aim of librarians as facilitators is to bring about a 'productive proximity of information and information seekers'[2]. To do this, librarians need particular skills and knowledge, but these are most fruitfully utilised with an understanding of the whole of the communication process to provide a frame of reference.

Another basis for a 'philosophy of librarianship' which links to the above is

a 'study of the sociology of knowledge and social epistemology'[3]. Communication may also be seen as the key factor in organisations[4], and this again reinforces the role of communication studies as an integrative base. On the degree course, which is oriented towards the social sciences, this can be represented as follows:

Year 1	Year 2	Year 3
Communication of Information	Information Services	Information Services
Documentation of Information	Information Retrieval	Information Retrieval
Library in Society	Functions & Operations	Functions & Operations
Sociology	Sociology	Sociology
Options: one of -	(Options continue in years 2 and 3)	
Child Studies		
The Book in Society		
Environmental Studies		
	Computer Studies	Dissertation
	Statistics	

Figure 1: Main areas of degree course

At Manchester, the communication papers had strong staff support in that the original paper was designed and taught in the first instance by team leaders, i.e. senior staff responsible for 'core areas' (Information Retrieval, Information Service, Management). Communication is viewed as an integrative foundation to both the degree and the postgraduate courses. Clearly, the environment here is different from that of institutions where only one or two staff think along these lines.

Given the above premises, the content and approach of Communication (and its linked subject Documentation) in the first year of the degree course is designed as follows (in considerably simplified form):-

Communication of Information	Interpersonal communication. Mass communication (inc. non-book media).
Documentation of Information	Generation of information (inc. research methods and primary publication). Utilisation of information. Problems of information control. Introduction to information services and information retrieval.

(2 lectures + 2 seminar hours per week per student).

The organising principles of the above are:

a. how people (including library staff) communicate face to face
b. how people communicate over time and distance
c. how information is produced
d. how the user can access information
e. problems arising from b, c and d
f. the librarian's attempts to deal with these problems

We examine means of communication in a variety of dimensions, which may be summarised in the following diagram:

Interpersonal		Mediated	
Dyadic	Small Group	Public	Mass

Fig. 2: Dimensions of communication

The current teaching plan of communication is outlined below. I think it worth itemising, as it is less likely to be known to librarians and some library school staff.

Libraries as sources of information
Importance of communications for society
Systems and models
Effective communication
Interpersonal communication
Language and meaning
Communication in groups and organisation
Report writing
Development of writing and printing
Literacy and reading development
The book trade
Non-book media
Control and censorship
Mass media
Future development of electronic communication systems

Fig. 3: Communications syllabus for BA (Library Studies) Course, Manchester Polytechnic

The content and approach on the postgraduate course is similar, as will be seen presently, although more concentrated because of the considerably reduced timescale (9 weeks for the postgraduate course, as compared with 20

weeks for the degree course). In both instances, the taught syllabus is supplemented by extensive reading lists.

These accounts are of particular courses in specific educational environment. They will not accord with practice in other establishments, and staff in other institutions have their own approaches to the teaching of communication content. By the same token, prospective employers have different expectations of trainee librarians; some will expect an awareness of society and its communications structure, others will place far more emphasis on 'pure' librarianship.

By and large, students and staff find it useful to have a common communications base. Also, a communication approach helps to challenge the expectations common to many students and a number of practising librarians that they are entering on a one-dimensional training for work in a small branch library. Admittedly, this will normally be the working situation for a number of young professionals, but it is hardly sufficient basis in itself for a wide-ranging professional education in library and information studies and the society which these studies support.

It can also be argued that a communication approach to library education offers an occupational strategy to allow us to cope with the restricted job market. A proportion, admittedly small, of students will go into 'information' posts in places other than libraries and information units or into posts in the media. Such a communication-oriented approach will also help us as potentially the most suitable professional group to make a real contribution to dealing with the information explosion. In this context, the policies of the Department of Library and Information Studies at Manchester Polytechnic may be examined more closely. Communication is on the syllabus of all courses operating at present, whether they be full or part-time. Those of us involved in the coverage of communication see students participating in the overall learning process as "fires to be lit, not vessels to be filled", pre-supposing that everyone has a certain amount of interest, enthusiasm and social skill which needs to be stimulated in certain ways. Our view is that the best way to achieve this stimulation of individual involvement in the Department and, by extension, in the profession, is to relinquish as far as possible the teacher/pupil syndrome. Under this arrangement, a set amount of information is to be pumped into the "vessels to be filled" - by contrast, we hope by creating a more interactive atmosphere in which it is possible for a dialogue to ensue to stimulate individual development and information sharing purposes, i.e. "fires to be lit" whereupon the individual can realise

his or her own potential. I hope that I have not given the impression of unstructured development - being an academic as well as a practical institution we have to cover a certain syllabus, to look at particular library-oriented questions. By way of an example, the syllabus for Communication on our Postgraduate course is quoted:

Small group communication
Knowledge and information
Systems and models
Communication in organisation
Non-verbal communication
Mediated communication
Mass Media
Control and censorship
Literacy
The book trade

Fig 4: Communications syllabus for Postgraduate course in Library Studies, Manchester Polytechnic

These topics are covered in consecutive lecture sessions, where the actual lectures provide information about the processes of communication, the systems that compete with and complement the library and provide models for its analysis. Such information may act as the basis for projects, and will certainly provide the material for several seminars.

Seminars, it is thought, consist of people as a group putting together their knowledge, ideas and opinions about a topic in a cooperative effort to learn. They are not intended to be an intellectual battle of wits, nor a mini lecture. As envisaged in this context, they are free discussion sessions open to student direction. Ideally, all members of a seminar group should contribute and interact while discussing a topic, which is the essential task in hand. One of the major objectives of seminars is to extend each individual's range of communication behaviour, and generally they are quite successful in this, particularly at the more mature postgraduate level.

In many institutions, these functions are seen as the responsibility of the "teacher" - in other words, there is a clear delineation of roles into teachers and taught/staff and students. In communications seminars as envisaged here, they are the responsibility of all the members. The role of the member of staff is emphatically not to lead the seminar, nor to direct the discussion, nor even to assess the group. He or she is there primarily

as a resource for information, observations and suggestions, and also to learn as an individual from the general corpus of knowledge and experience which the whole group represents. Seminars, then, are an informal and interactive back-up to the traditional pattern of lectures. In such seminars we are trying to evolve an interface between theory and practice.

It is realised that the subject can present peculiar problems to students who encounter it for the first time, largely because of its interdisciplinary nature, drawing as it does on widely differing academic contexts. However, it is felt that adequate explanation of this phenomenon, resting on the complex structure of society, can go a long way towards bringing together aspects deriving from telecommunications, anthropology, psychology, sociology and management. Other areas such as behaviour, perception, language, thought and meaning are also covered, opening up new fields of experience and patterns of communication. Incidentally, it has been found that people are more ready to make points in lectures, to ask questions, whereas they would previously have been overawed by the apparently omniscient lecturer. In seminars, we cannot help but grade participants into high, medium and low communicators. The first two categories we are not too concerned about - they can look after themselces in discussion in society generally, and sometimes more important, in interviews. High communicators can sometimes be in danger of communicating excessively, of causing an information overload, but it is usually not too difficult for them to tone their performance down when the occasion demands. What is far more difficult is for the low communicator, who tends in any case to be unsure of his or her motivation towards a career in libraries, to step up his or her performance to a degree where we may be sure we are getting through. If we receive no feedback from some individuals in a group environment, we take the time to ask them on a one-to-one basis why this is. Some students take to seminars and discussion as to the manner born, others, despite being told categorically that they are no longer at school and that we want to hear their views, are still reluctant to accept these parameters. Generally, those students who are commited to a career in librarianship accept that it does not just involve attending college for a given number of years, obtaining a degree or a diploma and then disappearing into a cosy little backwater until retirement. They can see that they have the potential to contribute to and to change the profession, and they can see that by discussing topics in seminars they are taking the first steps towards achieving this. They appreciate that in their professional lives, they will have to discuss, to bargain, to persuade, to interact. They will do this in a variety of settings in committees, in staff meetings, in meetings with

local government officers, in talks to the public and to special interest groups. This is the wider field of experience which we attempt to prepare out students for. We do this internally, by developing an awareness of communication theory, and by encouraging students to observe communication practice. That is the formal side of our educational process. However, there is another, external, side to our communication activities - we encourage students to participate in professional activities at a range of levels.

We are constantly aware of the outside world of the profession beyond our doors - we exist to serve and to add to that profession, and we see ourselves as a dynamic part of the profession, not as sequestered aesthetes, inhabitants of the 'groves of Academe' shielded from the pressures of society. We are part of society, and part of our profession. Despite this we realise that it would be all too easy for individual students to merge into the background, to have little or no involvement with professional affairs and the useful contacts and stimulating exchanges which these can engender. So, we are aware that there is only so much that can be done internally - sooner or later we have to think both as a Department and as individuals, in terms of forging links with the profession, a point to which I shall return presently.

What we are particularly concerned to facilitate is the transition from library school student to professional librarian. This, I realise, is not a rapid process, and has to be achieved under the constraints of the complex systems of education and society within which we operate. Given that this is a gradual process, we must do as much as possible to make young professionals aware, while they are students with us, of communication and its purposes. We also attempt to set the library in its societal context, to assess its role vis-a-vis the community, and its internal workings, both formal and informal. A clear picture of the mass media, and of comparatively recent developments such as word processing and teletext, is given, in an attempt to fill out the complex communication patterns which the library is an integral part of. We hope that if new entrants to the profession have a wider view of society, and an increased ability and desire to communicate, they will be strongly motivated to implement effective communication in a library context, to the mutual benefit of themselves and the community which they are serving.

We recognise that society has changed significantly in the last twenty years

alone, but our profession seems to have lagged behind these changes. It is now time for the image and attitude of the librarian to alter, both externally and internally, to reflect changes in society and patterns of information provision. In a society which generates vast amounts of information, we are charged with the responsibility of collecting, conserving and disseminating, that information when a need for it is made known. We have always been adept at the first two, but we have still to learn that information is a practical tool, that it is of no use if it is kept in cold storage without any human activity being brought to bear on it, or resulting from it. Our function is to deal with society's information needs to satisfy them whenever they are made known, and with this in mind we should become more aware of what society wants to know and how we can help it achieve this knowledge. Very few librarians now exist in a vacuum - the days of our profession being a retreat for the bookish introvert are numbered if not over - so anything which we can do in the context of professional education to prepare students for this situation must be beneficial. We do students, and the profession as a whole, no favours if we shelter them from reality. We must attempt to make them resilient and resourceful rather than submissive and stultified.

Our responsibility to society, and our interaction with it, are stressed in our teaching patterns and content. We are concerned above all to humanise and to de-mystify the profession, and if an increased commitment to communication can achieve this then so much the better. It is no longer enough for a librarian vaguely to "like books and people" - one has to be dedicated to information and its dissemination, and to making sure that people's, in other words the community's, of society's, needs for that information are ascertained, understood and satisfied. We endeavour, for instance, to increase student awareness of audio-visual materials, to open their eyes to the existence of forms of information packaging in media other than books.

One positive way of involving oneself in the profession, which we advocate very forcibly, is taking an interest in professional associations and participating in their activities. We have close links with the Library Association and its numerous subsidiaries on a national and regional level, and we encourage students not only to attend professional meetings, but also to become involved in committee work or student representatives of Manchester Library School. This does not only give students a voice it also prepares them for involvement in the profession at grass roots and eventually at a much higher level. It cannot be stressed too highly just how valuable

this kind of professional involvement is, and those students who have a realistic and enthusiastic view of the situation respond favourably to it. The less realistic and less committed members of the student body still seem to require a course in which everything is handed to them on a plate, where little or no effort is required on their part, a course which approximates to"All you ever wanted to know about libraries but were afraid to ask". If a library school is performing its function satisfactorily, it should ensure that no entrant to the profession is afraid to ask, also that no member of the community is afraid to ask the products of our educational process for the information they require.

We are now in a position where classroom instruction is to some extent moving away from the formal lecture to approaches involving greater student participation. We are more concerned with promoting methods of enquiry and of criticism than with establishing eternal truths. We are trying to prepare members of the library profession who are able to adapt to changes in society, to tackle new kinds of problems and generally to think for themselves rather than slavishly copy down the views of some oracular figure (such as myself!). One device which we are beginning to use is that of simulation or role-playing. Where this has been tried, the results have been filmed on videotape using the facilities and equipment of the Polytechnic Educational Services, and used as a teaching package. Regrettably perhaps, we have not yet developed this in ordinary seminars. Hopefully we are making a positive contribution to the quality of education, helping to bring awareness of current developments to new members of the profession. What we are trying to do above all is to remove traditional constraints from our curricula and hopefully from the thinking and attitudes of our students.

Under my terms of reference, I have related many of my remarks to what we do at Manchester, but I know that at least some other library schools in Britain are equally committed to practical understanding of communication. It would be interesting to hear how colleagues in library schools elsewhere feel about this.

In fact, proposals have been put forward for a so-called "invisible college" for library school staff. It is very easy to become involved too deeply in one's own administrative problems and procedures; an exchange of ideas with colleagues outside one's own establishment is essential, as so much can be done internally. External ideas are essential to further stimulate teaching procedures, to evaluate the extent to which such studies are essential to a profession such as ours which now concentrates more on the exploitation of

information than on the passive collection and provision of documents. Meetings of interested library school staff are held from time to time, to mutual benefit.

In conclusion, we cannot fail to be affected by the process of change in society, and just as we as individuals will change, so must libraries if we are to develop the community's interest in information, recreation and education. They can no longer be formidable places of silence in which people whisper and tread softly, but must strive to be stimulating centres of the community. The more of our professional librarians who subscribe to this ideal the better, and the logical place for them to acquire their ideals and values is in a positive, forward-looking library school. One can only hope that in the future we get less references for candidates which read "Mr X is of a quiet, retiring disposition, and suffers from nervous strain. Although not suited for the rigours of an academic career, he is very fond of books and eminently suited to a career in librarianship", and by contrast more which run as follows, "Ms Y has approached her duties with enthusiasm, intelligence and confidence. She is industrious and efficient, and I am highly satisfied with the accuracy of her work. She is a person of strong personality and a pleasant disposition. She gets on well with colleagues and with members of the public". (Both genuine examples)

The accelerating change in our image and society's expectations of us will ensure that this happens - commitment such as ours to increased communication at all levels will ensure that it happens even more quickly to the benefit of society and of the profession.

REFERENCES:

1 SLATER, Margaret. Career patterns and the occupational image. London, Aslib, 1980. 334p

2 STONE, C.W. The library function re-defined. Library Trends, Oct 1967: p.185

3 SHERA, Jesse Hauk. Foundations of education for librarianship. New York Becker & Heyes, 1972. 511p

4 IRVINE, Alec. Improving industrial communication. London, Gower Press, 1970. 330p

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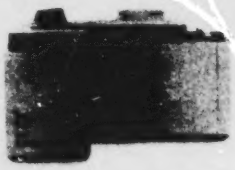

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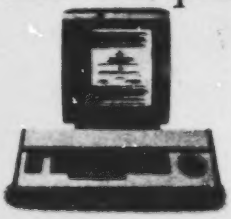

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LIBRARIES AND THE COMMUNICATION PROCESS

Thoughts and memories of a conference

Summary paper by Michael W. Hill, Vice-President of IATUL
and
Director of the British Library, Science Reference Library, London, U.K.

This ninth IATUL conference has been a good one. Lausanne is a delightful place at any time, at its best, perhaps, in one of the warmest April spells I can remember. It is an old city set at the junction of two major Roman highways but we have met in the very new buildings of the new Ecole Polytechnique, so new that some are still being built. We are thus brought face to face with today's opportunities in an environment that is centuries old, mellow and beautiful. Does that not describe also the world of the library?

We have had some 24 papers in this conference, including the introductory speeches which were so relevant to our theme and immediately and pointedly focussed our attention on the importance of language and comprehension if we are to communicate easily. We have had visits to CERN and to the ILO. And as aids to the communication process we have had a dinner, a supper, four lunches, eight coffee breaks and a session to compare powers of standardised communication on a single topic at the Caveau du Chateau de Luins. There was so much to absorb that a brief summary cannot do it justice. All I can do, if I may borrow an American expression, is to share with you some of my impressions and some of the thoughts it generated in my mind.

The last IATUL conference was on Cooperation: those who were there may remember that, while feeling that cooperation was both meritorious and, in a stringent world, probably inescapable, I did express some scepticism about its long term viability. So much of the success of cooperation depends on the enthusiasm of the initiating individuals and it rarely survives the departure of those individuals. However, when one comes to the communication process, there is much less scope for scepticism. University libraries, sometimes called the heart of the university, have always been an integral and vital part of the process of communication, both between scholars of the same faculties but in different universities and between those of different disciplines. The library of a technological university may be primarily concerned with making communications from this century's scientists, engineers and technologists available to their colleagues at work today. Archival libraries enable those of one generation to communicate with those of a later one.

Libraries have traditionally undertaken this communicating role by collecting, storing and making available the ideas and discoveries of scholars as recorded in manuscripts, books and journals. Ever since the invention of the telephone there has been means of communicating between today's scientists in different cities and countries but this has not affected libraries significantly. Today's change is, of course, that means of publishing, storing and transmitting knowledge exist which do not necessarily require the intervention of a library, as we know it. It is this fundamental fact which brings IATUL librarians together to reassess the role of their libraries in the communication process and to decide upon the role they will need to play in the future. It is the libraries of technological universities which are likely to be the first to feel the impact of the new technology, because they are concerned primarily with the products of today's scholars, not those of past generations.

At this conference we have considered aspects of the communication process itself and its basic nature; we have talked about changing methods, both electronic and more traditional, of communication between scientists and engineers; and we have considered the various pressures affecting the university world and hence the environment in which communication occurs. We have looked at communication between the library and its users, between the library and its sponsors, between the library and its suppliers and between one library and another. We have looked at the political frameworks which shape library and information strategies as a whole and we have heard about the framework for facilitating more efficient library activities which IFLA provides. Because we are an international body, we have been able to look at differences between the way things are done and the extent to which things can be done in different countries with very different cultural, social and economic environments. Across all of this we have constantly been coming back to considerations of the role of the library and the role of the librarian in scientific and technological work in the university in the future and also we have considered the implications for training future librarians.

Switzerland, as Herr Maier on the first day reminded us, is an excellent example of a country which depends on communication yet has major communication problems. The road and rail networks have to cope with high mountains and snow in winter. There are three capitals, each with a different functional role. There are four languages and no one of them is the official language in preference to the others. Yet the country is a very stable unity. There must be a lesson here in solving communication problems.

The problems created by the fact that the majority of scientific communication still has to take place in language, even though it can be aided by diagrams and much described by manipulating formulae written in standardised symbols (both of which make it feasible for European scientists to understand a surprising amount from papers written in Oriental languages), repeatedly figured in our discussions. Mrs Granheim stated that in

her view "the language barrier presents the greatest obstacle to international communication" and added that within the membership of IFLA "a working knowledge of over 100 languages is available". This may seem large but it does represent 100 languages over the whole globe. Mr Musisi brought home to us how small the language problems of even the EEC (7 official languages) can be when compared with African countries. Kenya, he told us, has 44 languages and Zambia 46. Of course, within African universities the medium for scientific communication is usually English or French, though in the north Arabic languages are used.

An important aspect here is the very serious risk of accidental misunderstanding. Professor Fontolliet referred to the need for the receiver to be tuned to the transmitter. Professor Shapero has often pointed out that the receivers are not always tuned in: people do not always receive and act upon information communicated to them. Despite the volume of publicity given to the hazards of smoking, many people still smoke. My wife will readily give other examples of communications not being acted upon. Perhaps, however, such problems are not ones librarians have to worry about.

Bertrand Russell, the philosopher, in his book An Enquiry into Meaning and Truth says that each word in a language has four meanings: spoken, heard, written and read. Churchill, was it not, who said that the British and American nations are divided by a single language. In our field I have frequently observed problems arising because the sense in which a word is used in British English is different, often subtly different, from its equivalent in another language. 'Science' in English and 'Naturwissenschaft' in German are not quite exact synonyms. "Engineer" in Britain is a term with a very limited meaning, normally that of a member of one of the professions such as civil engineering, electrical, mechanical or chemical engineering. An engineer is regarded as someone quite different from a scientist or from a technologist. In other countries, Japan for example, the term has a broader meaning, perhaps "applied scientist" might be the nearest British equivalent. The difference becomes important when, for example, one is comparing statistics. It is quite misleading to compare the proportion of the populations in the two countries who are engineers as given in various statistical returns. It is also important when putting information into international computerised systems, for unless the terms used do mean the same things at each input source, the results of retrieval searches are likely to be rather odd. The machine itself will not resolve the problem, although it can now resolve spelling differences.

When considering communication problems in developing countries, it was interesting to hear from Mrs Lawrence about the way efforts are being made to relate attempts to involve libraries and information services in efforts to raise the level of literacy in Jamaica. Only if the population is literate can information for development be communicated effectively. Whenever words are the principal medium for communicating

information, messages will be transmitted clearly and understood properly only if both sender and receiver can handle language fluently and in depth. One, too, often sees examples of poor communication even in the most highly developed countries when scientists and engineers, who have devoted themselves to experiment and design and who unthinkingly accept the jargon of their calling, try to communicate with scientists of other disciplines and non-technical people.

Professor Fontolliet also drew attention, in his paper, to the enormous difference in information processing capacity between the eye and the brain. The eye will cope with about 100 megabits per second, but the brain with only 50 bits per second. On the other hand, as Dr Shaw pointed out in discussion, the brain has a remarkable capacity, far greater than any computer, for correcting distortion in the signal received (we understand to a considerable extent a foreigner speaking our language even though he may make grammatical mistakes or get words in the wrong order).

A logical sequel to this discussion was the paper by Bierschenk which examined from a linguistic basis the degree of understanding contributed by searchers and users to the probable content of a paper with a given title. It seems that a major factor is the language structure and that it is this which makes it feasible to use titles of scientific articles for automatic concept extraction.

Jarc described Haeffner's model of information flow and concluded that the vital component is still the human being rather than documents, computers, or telecommunication devices. From there he led on, via a discussion of the defects, or rather incompleteness, of available databases, to a plea for a special database for mechanical and industrial engineering. Some of the audience were, however, not convinced that existing databases, if used in combination, were not adequate or, alternatively, that the demand for a database for this field would be sufficient to justify the cost. One can sympathise with Jarc. Although one puts up with the nuisance of having to search several printed bibliographies and abstracting journals in order to cover reasonably well a subject field only partially catered for by each, since on-line services are sold on the basis of easier, quicker or more effective searching, the nuisance of switching from one database to another is less readily acceptable. One's level of expectation is higher and thus the frustration threshold lower as a result of sales publicity. As we know, technologically it is feasible for a single question to be input and for the machine itself to search among several databases but it would be costly and there are other barriers, barriers which have inhibited the use of a common command language. There is a communication problem here which, hopefully, in time will be solved.

If we, as curators of a vast databank or as intermediaries in the information field (either description has its value in aspects of our work), would wish to see further improvements

in the ease and efficiency with which we can communicate with our sources and resources, we have also to decide on our role in relation to new ways of inter-scientist communication. Not all of these are electronic. Already, we have had to decide how to respond to the synopsis journal, should it become a widespread means of publishing (though as yet it shows little sign of doing so). Dr Schmidmaier helpfully drew attention to the new and growing occurrence of poster sessions, the information content of which is likely to be quite ephemeral unless librarians do something to ensure permanent recording. One may disagree, I certainly do, with any idea of collecting, cataloguing, indexing, storing, conserving and reproducing posters on demand, but one cannot ignore their existence. They are a formal means of communicating research information. Perhaps the first step should be for a study to be carried out into the extent to which the information content of poster sessions is subsequently published in more conventional form.

Mr Bubb, rightly when one thinks of the surfeit of material that is published and the dubious value of much of it, made during discussion a plea for limiting the amount of material that we try to keep in our libraries. Surely only two or three "back-up" libraries in each country need struggle with the task of managing the great bulk of the publishers' output. These are libraries primarily designed for use by the profession rather than by the academic research worker. Surely the task of most libraries, those used by the so-called end users is to present material in an easy usable and digestible way. Nevertheless, access to any necessary published material must be possible and, as Dr Shaw pointed out, we are in danger of moving away from this situation rather than towards it. Poster sessions may be one example. For some time conference pre-prints have posed problems: perhaps better information about special libraries, such as that at CERN, which make a point of collecting such material in their field would help. In the future electronic publishing may add its own problems because the content is not necessarily permanently recorded: it can be changed or even erased without the original information being subsequently available from some library or store. As legal deposit at present operates there is no requirement for material published electronically to be deposited at a central archive. The implications, should electronic publishing become extensively used, need careful study and it must be remembered that research workers are unlikely to be satisfied with an impermanent record of their contributions to scientific progress. Is the likely outcome that university libraries will become the repository of the only permanent copy of their research workers' output? If so, such libraries will become a vital component for inter-library communication of historic information on scientific research, "historic" being defined as "no longer sufficiently in demand to justify retaining in an electronic form".

However, to return to Mr Bubb's point, which has been echoed by many speakers at other meetings - I remember an eminent Danish scientist making the same plea at the FID

conference in Copenhagen - what can we do about the awful problem of too much information, much of which is inaccurate or superseded (for example because techniques of measurement have improved)? To say discard the out-of-date material is facile because articles are not published singly but in journal issues along with other articles which may still be valid and we librarians make weeding even less easy by binding several issues into large volumes, to discard which is to risk throwing several babies out with the bath water.

I sometimes wonder if we as librarians could make a start with our research publications. Could we not only discard material more than a quarter of a century old and no longer of modern relevance or value but also ask those refereeing new papers to indicate any previous articles which are superseded by the new one and which should be deleted from the databases so that they are no longer needlessly requested? We must surely keep always in mind that communication must be efficient and not wasteful of time and effort on the part of the recipient. It was aspects of these several problems which Dr Andersen discussed in his very interesting paper on "Dilemmas of document communication".

If one of the problems libraries in the industrialised countries face is that of limiting the mass of available publications in order to make communication feasible, to unchoke the information channels, how different the situation is in many other countries. When searching databases on-line, librarians in industrialised countries keep adding extra search terms in combination with those already used in order to limit the number of references retrieved to manageable quantities. In countries where literature resources are thin, librarians are more likely to broaden the search in order to retrieve references to some of the items they actually have. Electronic publishing will not solve this problem unless the costs of access are low enough that libraries in the poorer countries can afford them nor until the telecommunication links are reliable. Books, journals, reports and patents in printed form will remain for a long time to come the basic need of technological libraries in the great majority of countries - perhaps in all - and how very important, therefore, is the success of the UAP programme, on which IFLA and UNESCO collaborate, and how important it is that the "universal availability" shall not be qualified by "as long as you are rich enough to afford it". (Nevertheless, that should not be taken to mean that publications should be available free of charge - the author, the publisher and the suppliers need proper reward or remuneration for their work).

Of course, science and technology is, in one way, a particular case. In many walks of life the information one needs each day is local information: information about local events, about the population of one's own country, about possible markets within a hundred miles, about the soil and climate of one's home. This is not so of science and technology. It knows no political boundaries on a map. Information, the results of experiments in another university anywhere in the world can, in many cases, be perfectly applicable and

usable in one's own research. Even where technology is concerned this is also true provided due allowance is made for local capabilities, ie appropriate technology. In science and technology, therefore, the librarian is involved, and always has been, in what is now called transborder data flow. We are not, however, involved in the sensitive aspects of this, such as confidentiality of personal data, thank goodness, and I am sure that one of the benefits of membership of IATUL is that members will assist one another when one has a problem in finding a source of science and technology information from another country. Loans between countries may best be undertaken by the designated national centres, such as BLLD in the UK, but for referral to information sources (including identifying publications) a librarian of a similar background to the one enquiring will be able to give the best service. We in the SRL have a long tradition of helping in this way and I am sure the other IATUL members willingly do likewise.

Any scenario for the environment in which libraries will operate in the future more than five years ahead must take into account the technological changes that are already with us as well as the effects of the economic depression that may or may not ease. Even in the poorest developing countries, the microcomputer must soon be playing a part because it costs so little. True, both Mr Musisi and Dr Tell pointed out that because the status of librarians in some countries is so very low it is unlikely that they would get acceptance from the authorities of proposals for acquiring such machines but a way round this must be found. Perhaps UNESCO could be encouraged to create the appropriate climate of opinion in each country.

School children in industrial countries not only use pocket electronic calculators as a norm but they are using quite sophisticated computers at school. Not long ago Stephan Swartz, of the Stanford Research Institute in California, described work he had done teaching successfully, six year old children to programme computers in a language more complex than BASIC. Changes in the telematics technologies are breaking down the traditional boundaries of businesses. For example, a major hotel chain now advertises that it provides facilities for teleconferencing. It makes sense: if they ignore the development their income from housing conferences could vanish; this way instead of housing all the delegates in one hotel, they house them in several.

We, too, have to respond to the changes and to seize new opportunities. Mr de Kemp's paper set an example. His organisation, faced with the possibility that telematic order systems could eliminate the need for a middle man, the subscription agent, his hit back, indeed pre-empted the possibility by using the new facilities themselves to provide additional client services. The availability of on-line terminals in libraries, well established in many, can develop the habit of going to the library for such facilities and using books at the same time. Chicago Public Library already has a programmable machine for library users to input data for themselves. As soon as there is a reasonable level of standardisation between equipment, could this practice become widespread?

Peter Harvard-Williams and also Björn Tell led us into the fields of national and international policy and the political frameworks within which libraries operate. To some extent university libraries are insulated from the whims of national information policy since they are part of the university and funded by it, even if they do provide a service to neighbouring industry. Nevertheless, such matters cannot be simply left to others and these two papers indicated why. Mr Mortimer, in a very entertaining paper, indicated how to use modern information techniques - the pressure group - to get politicians to respond to the need for adequate library facilities. If we cannot see our President, Dr Sydler, leading a protest march from Zurich to Paris, or organising a sit-in at the UNESCO building, it does not mean we should feel that the principles Mr Mortimer enunciates and, in particular, the skillful use of publicity, that very public method of communication, are not for us. We may well need them if we are to ensure that we are heard and understood amidst the glamorous clamour and clamorous glamour of information technology.

The cry that librarians (and documentalists) lack the status they feel they merit is commonly heard and is widespread. A few librarians have achieved public eminence but the number is very few and they are not usually remembered as librarians (eg Casanova and Chairman Mao). To gain acceptance in an academic institution, the librarian naturally must be a scholar in his own right not just a supplier or a sort of shop-keeper (which is in no way to denigrate shop-keepers). But whereas the importance of shop-keepers is enchanced by the fortunes some amass, no such visible trophy exists for the librarian. The value and needs of other professions is more easily communicated to those in power because many of them rise to such positions. Many parliamentarians are lawyers, some have been doctors or engineers or scientists. How many have been librarians? How many librarians or documentalists have achieved eminence on another sphere whence they could help the cause of their colleagues? Denn Lewis in my country has several times in the last few years pointed out that information scientists must plan to move on into other realms of activity if they are to prosper. The same philosophy should apply to librarians. All too often, at present, librarian is regarded -- as in the case of Casanova -- as a final career. Should it not be for many a stepping-stone? In Belgium, Professor Humblet, a documentalist who is now a member of their parliament, is introducing a bill into parliament concerned with information resources in that country. If there were more such in each country, information might get the closer attention some of the papers at this conference have suggested it should. In Japan, industry can talk readily with, and collaborate with, the Civil Service because something like 50% of senior civil servants are engineers. Would it not help us if similarly librarians, documentalists and information workers could make their way to similar posts?

Mr Mortimer quoted the use of publicity for communicating with those in positions of influence. It can also be used for communicating with our clients. Dr Haase and Mr Bubb

concentrated on the question of communicating with users, Mr Bubb those outside the university, Dr Haase those within. Dr Fjällbrant described a study of the attitude of users to new library resources, namely computerised services. The results seemed discouraging. One lesson that seems to result is the need to advertise in such a way as to create a demand for one's services. Again there is much that can be learnt from Japanese and American industry in this respect. Identify the target group of users, identify a product they need, provide it efficiently (ie "debugged") and more cheaply than any competitive product and contrive to make the prospective clients feel inadequate if they do not use it.

The need to improve communication skills has implications for the training of librarians. As Mr Meakin says, courses need to make appropriate allowance for such training.

To some extent the comments of Professor Meadow and Mrs Oldroyd on the way librarians will work in the future are relevant. Meadow puts it very clearly that he expects the librarian to be much more involved with service to users and much less with acquisition, recording and curatorial tasks. This was evidenced during the visit to CERN where we learnt that in order to give direct service to the wide range of scientists the proportion of porfessional librarians to clerical staff had been increased even though each professional had, as a consequence, to do some sub-professional work.

Finally, let me touch on communications between libraries. Mrs Lawrence told us how networks of libraries had developed in Jamaica in order to improve the service. At the beginning of our conference, Dr Immer challenged us to communicate with each other in such a way as to reduce the costs of our operations. Mrs Granheim showed us how IFLA is indeed creating the framework which will facilitate not so much cooperation as sharing resources. Practical solutions to exchanging catalogue records, to identifying unambiguously yet simply books and serials, to standardising some activities and improving national bibliographies are emerging. Ways of overcoming cultural and other barriers are being found and ways of preventing copyright becoming a barrier to progress while maintaining author's rights are being sought.

It is, perhaps, worth reflecting that there are a great many libraries in the world, several tens of thousands. This is potentially a sizeable market for suppliers not only of books but of equipment. Given a reasonable degree of agreement between libraries on standards for electronic equipment, it could be worth manufacturers producing micro-computers specially to meet our needs. It would no longer be necessary for us to adapt machinery designed for other tasks as we had to when only large computers and even mini-computers were all that was available.

In conclusion then we have had an interesting conference. Communication between us has been by the traditional means of discourse and discussion: long may it remain so. We have ranged widely over many aspects of communication but to me the principal and insistent message has been that the librarian must become more and more a communicator as the decade ahead of us progresses. Acquisition, conservation and lending will, in technological libraries, become less and less important. Instead we must grasp the essential part of our job - the provision of information - and use whatever means and sources are the most appropriate. Our organised, indexed printed material will be wanted for many years yet and gives us a head start on those able to provide information from alternative sources only. Let us take full advantage of it.

COMMUNICATING WITH THE NEW ELECTRONIC LIBRARIES

Charles T. Meadow

Postgraduate School of Librarianship and Information Science, University of Sheffield,
Sheffield S10 2TN, United Kingdom

Abstract

New library and publishing technological developments are discussed from the point of view of how they will affect a library searcher of the future. Any library can become the entry point to a world-wide network of libraries, making almost all the world's literature available to any searcher. This, in turn, imposes requirements for better means of control of a search and better terminals, as well as a change of focus on the part of the library. Libraries are seen as developing into communications centers whose primary mission is helping users solve search problems, rather than repositories of information packages.

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TECHNICAL MEANS FOR HUMAN COMMUNICATION

Prof. P-G. Fontolliet

Laboratoire de Télécommunications
Ecole polytechnique fédérale de Lausanne, Switzerland

Abstract

Based on simplified models used by engineers for the design of telecommunication systems, an approach of the complex process of human communication is given. Some general concepts like information, analog/digital, noise, real time, network and information quality are introduced and commented.

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COMMUNICATION AND A NATIONAL INFORMATION POLICY

P. Havard-Williams

Professor and Head of Department of Library and Information Studies
Loughborough University, Loughborough, United Kingdom

Abstract

Britain has been considering the importance of a coordinating library and information programme, and initiatives have taken place in the House of Commons, the Cabinet Office, the Library Advisory Council and in the professional associations. The complexity of the issue and its solution make it very relevant to the problems of communication. First, problems of information and communication need to be simplified in order for their importance to be appreciated first by the politicians, the industrial policy makers and the population at large. Secondly, the professionals involved come from a variety of backgrounds and need to understand each other's problems. Thirdly, they need to make common cause together to achieve objectives one and two. The paper will outline the developments towards these ends which have recently taken place in the U.K.

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INFORMATION SERVICES - AN OVERLOOKED COMPONENT IN THE THIRD WORLD DECISION MAKING PROCESS - EXPERIENCES FROM UNESCO MISSIONS

Björn V. Tell

Director of Libraries, Lund University, Lund, Sweden

Abstract

The growth of the so called knowledge industries in the industrialized countries is a trend that has no visible traits in the Third World. The insight about the role of knowledge and information as important components in policy making has not come to surface. Also other components for the decision making process, such as skilled manpower, equipment, energy and dynamism may be lacking. However, together these components form a complex that can help to improve the quality of the decision making process.

Few of the less developed countries - the LDCs - realize that knowledge and information could transpire out of libraries, information services, specialist groups, research teams or consultants. All these could give information support to decision makers in government and local administration. They could also act as promotors of the use of the new information technology in the decision making process. Instead, it seems as the needs for information prior to decision often are supplied by any source whatsoever, except by libraries and information services. Libraries in the LDCs are supposed to support the educational system, and librarians' potentials as part of the nation's intelligence system are impeded by the ruler's reliance on other advisers who give him emotional or moral support during his difficult decision making.

Librarians and information specialists often have low status in the LDCs. The same status label also sticks to the international experts on mission. Their reports and recommendations, endorsed by Unesco, do not sensitize the policy makers in the same way as, for instance, the advice by vendors of hardware or equipment.

There seems to be a great communication gap to fill here. That information activities are regarded as a lower type of work calls for reviewing the means of communicating the significance of information services for development. The traditional talk about libraries as providers of scientific and technical information - STI - does not ring a bell in the ruler's mind. A better concept to use may be to talk about the need for a "social intelligence function", i.e. a capability to tap and analyze the world's knowledge stores for policy making, and help to establish a function that can improve the quality of policy making, and lead to social development and evolution.

The paper deals with the conceptual and organizational aspects of such a new approach by taking into account e.g. scenario writing, new vocabulary, organizational problems and ministerial networks.

COMMUNICATION WITH THE THIRD WORLD COUNTRIES

J.S. Musisi

Head of Library Services, Kenya Science Teachers College, Nairobi, Kenya

Abstract

Communication is the means by which information is transmitted and shared between 'two people' in order to enable them increase their knowledge. Within the framework of Unesco's new economic order, therefore, communication of information aims at providing facilities by which information should be shared universally through exchange of knowledge and experiences. The ultimate purpose of this economic order is to bring about human understanding, cooperation, and betterment of the quality of life.

Communication of information would not be a reality, however, if knowledge were not recorded, acquired, organized and disseminated for use. High premium in this respect therefore is placed on the role played by libraries. This implies the availability of qualified personnel, adequate library resources, regular budgets, and definite government support.

Most third world countries, however, are bedeviled with more problems than solutions, making it difficult to achieve smooth flow of communication. Some of these constrains are: lack of sufficient qualified librarians, insufficient and irregular budgets, long delays in delivery of orders due to lack of foreign exchange and vast distances from suppliers, lack of viable national publishers, and poor transport and telecommunication systems.

Librarians in third world countries should form national and regional library associations as forums for exchange of experiences and knowledge. In Kenya, for example, there is not only a strong library association, but also there is the regional Standing Conference of Eastern, Central and Southern African Librarians (SCECSAL) which brings together twenty countries. Through these organizations, they should affiliate with international organizations in order to share in Unesco's activities like UAP. They should also politic and influence their governments to appreciate the importance of information as a tool for socio-economic, political and technological development. Thus, national information policies should be established for the creation of systematic national information systems and services.

International organizations and industrialized countries be requested to offer definite and substantial assistance through aid, conferences, exchange of personnel and consultancies, publications to enable realization of short and long term plans of the third world countries.

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LIBRARIES AND INFORMATION IN DEVELOPING COUNTRIES

P. Havard-Williams

Professor and Head of the Department of Library and Information Studies
Loughborough University, Loughborough, United Kingdom

Abstract

To talk about information work and libraries in developing countries is perhaps presumptuous. Conditions are so different in different countries of the world. One talks of 'Africa', but it is difficult to generalise - is one thinking of West Africa or East Africa. Even within regions, there are considerable differences: compare Francophone and Anglophone West Africa, for instance. Even within countries, of course there are differences: in Nigeria there are nineteen states, created because of local distinctions and differences. Division by religion is another factor but then a religion can be different in different ways: Christianity differs from place to place, as does Mohammedism or Buddhism.

Yet it is possible to make some generalisations. The development of an infrastructure is an economical necessity for all developing countries. It must be based on a realistic appraisal of what exists. In most countries of this type, there is a hierarchy of libraries from special libraries (frequently of a good standard) to public or school libraries (frequently non-existant). Communications amongst them will depend on the communication standards of the country. A major problem is that attraction of appropriate and qualified personnel, and education and training varies, and can also be a problem. The Unesco programmes - Unisist and Natis - now unified into the General Information Programme have influenced development. In a recent Loughborough PhD thesis, Choi Jung Sin of Korea, examined information and library systems in advanced developing countries. He found that in many countries there are national committees, but that their role (and effectiveness) varies.

Information centres and services are found in most countries, starting from the general service and developing into specialised services. The concentration is on science and technology (especially agriculture and medicine). The standard of archive repositories is also variable. The mechanisation of work in National Information Centres is in its infancy. Obstacles to development are shortage of qualified staff, lack of a national policy, insufficient funding, lack of coordination and lack of user education. Improvement of education and manpower planning is essential, as are clearer concepts of professional service. Much data needs to be collected by research workers, but the most effective work must be done by the nationals of the countries themselves.

IFLA'S ROLE IN AIDING INTERNATIONAL COMMUNICATION BETWEEN LIBRARIES

Else Granheim

President of IFLA
Statens Bibliotektilsyn, Oslo, Norway

Abstract

A major distinction must be made between communication/cooperation on the national or regional level and that on the international level. There are other barriers to be confronted and they are mainly of a technical, economic/political and cultural character.

The paper is restricted to IFLA's role in aiding international library communication.

IFLA's UBC programme must be said to constitute an important factor to remove technical barriers and four major thrusts can be mentioned: ISBD's standardization of forms of headings, the standardization of machine-readable bibliographic records and the improvement of national bibliographies.

Standardized communication formates have increased the awareness of the existence of a publication and where it is held. Barriers of an economic or political character to undermine these technical achievements fall within the scope of IFLA's programme of Universal Availability of Publications. To work towards its objective the programme aims to improve availability at all levels, from the local to the international, and at all stages, from the publication of new material to the retention of last copies.

At a pragmatic level solutions to the political problems of communication depend on finding a balance between the interest of the State and the right of access to information.

Although many countries have internal copyright agreements the difficulties in legislating copyright for transborder data flow must be resolved. IFLA has begun an International Study of Copyright of Bibliographic Records in Machine-readable Form. The first phase will be to elucidate the problems encountered by national bibliographical agencies today in their exchange of such information.

A second study is one on Copyright of Materials for the Handicapped. This will provide a survey of library service to such groups, both existing and desirable.

With regard to cultural barriers the language barrier perhaps presents the greatest obstacle to international communication and IFLA is responding positively to request for permission to translate or adapt its publications. All efforts are made to respect fully the national practice with regard to standards and norms composed for developing countries. The national bibliographical agencies should, however, undertake the responsibility for preparing the comprehensive bibliographic records of its national imprint. The acceptance and use of standards for libraries will have greater impact if these standards are promoted by local leaders in the library community. In this way the seminars held by IFLA and co-sponsored by Unesco to discuss topics as library education programmes and resource sharing of libraries can help remove communication barriers.

Communication between libraries should also be related to the various needs of different communities within a country, needs that ought not to be overlooked in developing a global information system. Greater attention should therefore also be paid to User Research.

SYSTEMS VERSUS USERS: AN ANALYSIS OF THE ART AND/OR SCIENCE OF SEARCH NEGOTIATIONS

Kathleen T. Bivins

Guest Professor, Linköping University, Linköping, Sweden

Abstract

This paper discusses the nature of information retrieval, its particular problems, and information retrieval systems in general. Traditional efforts in search analysis and question negotiation are presented, along with a sample of the numerous techniques of automated search manipulation. The newer methods involving the cognitive approach are discussed, and conclusions are drawn regarding the status of the situation and the possible future.

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THE THIRD WAVE OF LIBRARY AND INFORMATION WORK

B.K. Oldroyd

Head of Library and Information Service, European Space Research and Technology Centre of the European Space Agency, Noordwijk, Netherlands

Abstract

Three main periods of library and information work are identified. The first is the custodial or conservation period when the librarian saw his responsibilities mainly as a collector. The second has been a period of a more active and dynamic concept of service which has developed over the last thirty-five years both stimulating and being stimulated by the advances of electronic systems. Lastly a future period is outlined where, in view of the technological growth in this area, the library will become an information source. Probable new information sources are outlined. Will the library adopt the role of exploiter of these new developments or will alternative services or even the user himself take over?

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POSTER SESSIONS AS A NEW VIEWPOINT OF SCIENTIFIC COMMUNICATION - GENERAL PROBLEMS AND LIBRARY ASPECTS -

Dieter Schmidmaier

Director of library, Mining Academy, Freiberg, German Democratic Republic

Abstract

In the true sense the word POSTER designates a free, mostly decorative artistic form using displaying means of expression and being published in large editions.

POSTERS are already found in feudalism. Today they represent a popular branch of art and are frequently used for different decorating purposes, e.g. in rooms.

POSTER SESSIONS have made their way into scientific communication.

Scientific events, as conferences, congresses, symposia, colloquies, round tables etc. may be, are special ways of communication. The advantages of such events (called conferences for short) are

- the actuality of the information given
- the possibility of an immediate exchange of ideas.

The development of the last 10 years shows
- an increase in the number of conferences and
- an increase in the number of participants of conferences.

This results in a decrease of the advantages.

An alternative to it are POSTER SESSIONS. They have become popular as a medium of scientific communication. POSTER SESSIONS are a very productive form of the exchange of opinions. Concise theses, definitions and examples derived from the subjects of plenary sessions are displayed on boards by means of posters. In front of these the interested participants of the conference may meet to an informal discussion.

Conference materials produced in preparing and conducting conferences are particularly important sources of information. The libraries preserve these conference materials and inform on them. They are mostly published in paperform and less frequently in microform. Their quantity is rising constantly.

Today POSTER SESSIONS introduce new conceptions into the work of the libraries - the scientific posters - and in connection with it new problems of production, acquisition, cataloging, storage are arising. With regard to the great significance of POSTER SESSIONS the paper includes:

1. general ideas concerning POSTER SESSIONS and their popularizing in librarianship;
2. proposals for dealing with posters in libraries and
3. possibilities for POSTER SESSIONS to rationalize international conferences in librarianship.

Two posters on the subject of this paper is being produced.

SOME PROBLEMS AND PROPOSALS FOR COMMUNICATION IN MECHANICAL ENGINEERING

V. Jarc

University Edvard Kardelj, Ljubljana, Faculty for Mechanical Engineering,
Specialised INDOK Center for Mechanical Engineering, Yugoslavia

Abstract

HAEFFNERS MODEL, RESEARCH POLICY, INFORMATION FLOW, COMMUNICATIONS ABILITY, COMMUNICATION MEDIA MIX, INFORMATION MINDEDNESS DATABASES, INSPEC, ISMEC, MECHEN, DOMA, COMPENDEX, SAIDC-ST

Haeffners model of information flow and communication between research policy and implementation activities was transferred on integrated information flow between research, education, consulting and informatics on one side, and the end-user on the other side.

For information flow neither the availability of documents, computers and communications, nor the information mindedness are sufficient, but the human activity is dominant.

Databases are in different fields of application differently aggregated and representative (comparison between CHEMABS, INSPEC, ISMEC, COMPENDEX).

The information field in mechanical engineering is very messy and represented by several databases. Comparison between ISMEC, MECHEN, DOMA, and SAIDC-ST databases.

Proposals for building a common, representative database for mechanical and industrial engineering.

COMMUNICATING SCIENTIFIC INFORMATION THROUGH A UNIVERSITY LIBRARY NETWORK

Dennis Shaw

Keeper of Scientific Books, Radcliffe Science Library,
University of Oxford, U.K.

Abstract

Besides the widely accepted connotation of primary and secondary sources of scientific information it is postulated that a tertiary source may be identified. These three categories are defined and their role is related to (i) the pursuit of fundamental research at the frontier of knowledge, (ii) the assimilation of the established discoveries into the traditional body of scientific literature and (iii) archiving for posterity.

It is no longer possible completely to separate these categories nor to identify distinct media responsible for information transfer and storage. However, we can identify a hierarchy of media and each element within the hierarchy can be defined. In Oxford, printed materials are categorized thus: books, periodical parts, pamphlets (bound), sheets and photographic material. All of these elements have provided media for scientific communication, but there are others of importance not represented here, viz: (i) private

communication in manuscript form, (ii) other "unpublished" material e.g. preprints and conference abstracts, (iii) unwritten communications of which the most important are private conversation, unpublished conferences and colloquia and (iv) electronic databanks and machine-readable files.

The university library system represents a substantial academic investment yet it contributes very little to the support of the primary category of communication. In Oxford, (as elsewhere) science departmental libraries assist in the distribution and collection of ephemera but this is not an exclusive activity.

The "electronic journal", whose inception was heralded as marking the eventual replacement for the printed scientific journal extant since 1665, has not so far found many supporters; but experiments continue. Computer-based information networks are now evolving commercially as well as privately and libraries are participating in this latest method for communicating information. The characteristics of a communications network for Oxford science libraries are described. What use will this be for scientific information transfer is a matter of considerable importance. What effect will such developments have on the future role of university libraries?

USER STUDIES IN CONNECTION WITH THE DEVELOPMENT OF A DECENTRALIZED LIBRARY NETWORK

Nancy Fjällbrant and Olof Friberg

Chalmers University of Technology, Gothenburg, Sweden

Abstract

This paper examines the development of university departmental libraries in Scandinavia, and traces the influence of the German seminar libraries. This has led to the establishment of a number of library networks. Financial restraints have resulted in a number of studies of departmental library networks, with a view to possible rationalization. This paper describes studies of the attitudes of library users, at Chalmers University, towards computerization of literature resources and cooperation between the main library and the departmental libraries. It was shown that users were apprehensive of centralization and negative to any increase in administrative processes. At the same time computerization of literature resources was regarded positively. In view of these attitudes, and the increasing availability of computer equipment on the campus, it was suggested that the development of a coordinated decentralized library network based on the needs of users, could lead to considerable rationalization in the handling of literature resources at Chalmers.

THE TECHNOLOGICAL UNIVERSITY LIBRARY'S COMMUNICATION WITH ITS PUBLIC

A.C. Bubb

Librarian, University of Salford, Salford, Great Britain

Abstract

University libraries are channels of communication which must themselves communicate with their publics, of which the most important are members of the institution and people outside it who draw upon its resources.

Dislike of the commercial overtones of the promotion of services need not inhibit communication between the library and its public.

The technological university library is favourably placed to develop communication in the broadest sense.

Communication should go beyond the accepted techniques of instruction and user education to inculcate more generally applicable attitudes, needed as the bulk of information renders the preservation of human values more important.

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LIBRARIES AND THE COMMUNICATION OF INFORMATION: THE JAMAICAN SITUATION

Yvonne T. Lawrence

Librarian, Supreme Court Library, Kingston Jamaica,
Postgraduate Student, Department of Library and Information Studies
Loughborough University, England

Abstract

Libraries and information systems in Third World countries are often neglected as they are not considered priority areas. To create an environment for the communication of information, not only must library and information services be developed - illiteracy must also be eradicated.

Jamaica has taken positive action to achieve these goals through the Jamaica Movement for the Advancement of Literacy (JAMAL) and by the appointment of a Council to make recommendations for the co-ordination of islands' library and information services. A Plan proposing a group of networks, has been formulated by the Council, and has been adopted by the Government for implementation. Through technical assistance the programme for the development of the networks is now underway.

Effective information transfer and communication will necessitate the use of the new technology. With few exceptions, very little, in regard to automation, has been implemented in Jamaican libraries.

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PUBLIC RELATIONS OF SCIENTIFIC LIBRARIES IN THE FEDERAL REPUBLIC OF GERMANY

A Pilot Study of the Deutsches Bibliotheksinstitut, West Berlin

Y.A. Haase

Ltd. Bibliotheksdirektor, Hessische Landes- und Hochschulbibliothek,
Darmstadt, West Germany

Abstract

Up until now, scientific libraries in the Federal Republic of Germany have been very reserved about public relations. One of the reasons for this attitude has been insecurity about the application of the specific methods used in public relations. For this reason the Deutsches Bibliotheksinstitut (West Berlin) organized a project in 1978 that is meant to create the methodological preconditions for public relations in scientific libraries. The methods are to be tried out first in a model of local public relations at one library. The Hessische Landes- und Hochschulbibliothek (Hessian State and University Library) in Darmstadt has been chosen to serve as this model library.

Public relations of scientific libraries have two objectives.

1. Public relations aimed at the external public.

   These include:

   - a corporate idendity, containing an emblem if at all possible
   - cooperation with the press
   - public relations aimed especially at the university
   - exhibitions and other cultural events
   - publications
   - cooperation with other institutions.

2. Public relations within the library:
   - a uniform system of signs for orientation and direction
   - point-of-use instructions
   - information bulletins for users and employees of the library.

Effective public relations require personnel and money. That is why the financing administrations have to be convinced of the effective benefit of public relations.

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FURTHER TO MY EGG: THE STORY OF AN AUSTRALIAN LIBRARY CAMPAIGN

Arthur Mortimer

Liaison Librarian (Social Studies and Accountancy),
South Australian Institute of Technology, Adelaide, South Australia

Abstract

The Prime Minister of Australia, Mr. Malcolm Fraser, once said:

"If books and libraries are to compete in the kind of world in which we find ourselves, and in the kind of world in which we must live, if they are to be allowed to make the contribution to the quality of life which I know is within the possibility of things in this area, a more active advocacy for books and for libraries and what they can achieve is required, because the 20th Century does not permit passive salesmanship to succeed".

And there is some truth in Mr. Fraser's assertion.

This paper describes how an organisation of library activists known as CROW (Concerned Residents of the Western suburbs of Adelaide) has gone about providing "a more active advocacy" for libraries, particularly public libraries.

CROW's measures, many of which have been deliberately lighthearted and eccentric - in order to gain mass media attention - have not been without some success, but this must be viewed against a background of severe national deficiency.

This paper describes the "pressure tactics" currently being applied, by CROW, in order to raise the library consciousness of our national leaders and of Australian society as a whole.

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DILEMMAS OF DOCUMENT COMMUNICATION

Axel Andersen

Royal School of Librarianship, Copenhagen, Denmark

Abstract

The information explosion of the last century has had profound effects upon the entire society: The number of publications has increased enormously, and important consequences have been the development of bibliographic tools, of libraries and an improved cooperation between libraries. Computer technology has made a storage of bibliographic information in big, international data bases possible, and complex networks are now being established. As bibliographies and catalogues in their paper-versions thus are disappearing, other sorts of literature are going to be replaced by on-line accessible data bases, and telephone directories, sales catalogues etc. are soon to disappear in their traditional form. The question is whether the "literature proper" - books and articles -are going to be computerized too. Already in 1969 F.W. Lancaster predicted that a complete change to a paperless society should be completed in 1990, and as late as 1979 Chris. Evans advocated exactly the same point-of-view. Other new media such as microforms, video-disks, teletext, and videotex are part of the ongoing diversification as far as information storage and transmission is concerned. At the EURIM 4 Conference, Brussels 1980, a half-way status was made, and John W. Senders reported of an experiment at producing an electronic periodical without any paper version at all. In the U.S. other

experiments are recently being performed, aiming at storing the text of entire books (The Bible a.o.) by means of microprocessors to be used in connection with a reading plate device on which the text can be blown up. The explosive growth of literature has created a problem of abundance which cannot be solved by means of data bases and computerization alone: First the data bases usually give far too much information - too many references compared with the needs and capacities of the users. Second the very lack of redundancy of the output is at the same time a strength and a weakness seen in relation to the actual search situations: Apart from very specific subject inquiries performed by research workers, technicians, and other experts, the great majority of typical document search activities are best characterized by the facts that the users do not at all want information about all existing literature of a given subject. On the contrary: Users want to get one or a few, well selected articles relevant in the given context. It is, therefore, highly important, that user studies dealing with such badly defined search situations are being performed. They are, indeed, extremely common in public libraries with their mixed, and entirely heterogeneous clientèle; user studies of this kind could therefore reasonably be initiated in this type of libraries (T. Johansen, P. Ingwersen and P. Timmermann, 1980) (Annelise Mark Pejtersen (1980). Citation analyses show unambiguously that about half the articles published are never cited - that means: are never used by later research workers within the same subject field. Results of user studies - of any type - should be combined with comparative investigations of a number of information retrieval systems (i.e.: bibliographies, indexes, abstract services, catalogues, data bases etc.); the Cranfield experiments indicate quite clear, that redundance-free or loss-free systems do not exist in the real world. And: Recall and precision are related factors.

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A COMPUTATIONAL LINGUISTICS APPROACH TO CONCEPTUAL INFORMATION PROCESSING

Dr. Inger Bierschenk

Research associate. Dept. of Educational & Psychological Research,
University of Lund-Malmö, Sweden

Abstract

The experiment reported here starts with the assumption that the structure and representation of scientific information should correspond to the cognitive structure assumed to exist in the information searcher and user. The model of investigation of cognitive representation is based on overt manifestations of concepts and conceptual relations as they emerge in the abstract language of titles of scientific documents. On the basis of this language structure, an algorithm has been developed for coding the relevant concepts by means of prepositions. The relevance of the concepts is judged with respect to a schema model containing the main components Problem, Method and Goal, assumed to represent the basic components of research itself. When applied to scientific titles, the assumption is verified. The algorithm generates the concepts corresponding to the components, and assigns them to different data registers. An important result of the analysis is thus that the intermediate language structure of scientific titles displays a degree of abstractness suitable for automatic concept extraction, provided that an information- or cognition-oriented approach is employed in order for the data registers to be properly interpreted.

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COMMUNICATION SKILLS: THE ROLE OF THE LIBRARY SCHOOL

B. Meakin

Lecturer, Department of Library and Information Studies,
Manchester Polytechnic, U.K.

Abstract

It is becoming increasingly necessary for the librarian to be an active communicator. We can no longer be content to assume and perpetuate the passive role which history and our own public image have assigned to us. The librarian needs to project his personality to create the optimum circumstances for transmitting and disseminating information.

Given that this is the case, a co-ordinated and intensive effort is needed to produce and train librarians capable of communicating easily and effectively with subordinates, peers, superiors and most important the community. It is suggested that such an effort could best be instigated in the library school, as the only channel through which all prospective entrants to the profession pass. This presumes a dynamic role, an initiative, on the part of the library schools; also an equation which balances enthusiasm and commitment on either side, both in library school staff and in students.

The role and function of one such library school, that at Manchester Polytechnic is examined in some detail, including such factors as eschewing the teacher - pupil syndrome, and communication practice through seminars and discussion. Also, our commitment to education for librarianship involving an awareness of communication theory and encouragement to observe communication practice, is analysed.

The transition from the library school student to professional librarian is discussed. It is suggested that if students are aware of communication and its purposes, they will be motivated to implement effective communication in a library context, to the benefit of themselves and of the community which they are serving. To this end, the image and attitude of the librarian must alter to reflect changes in society and in patterns of information provision. Our responsibility to society, and our interaction with it, is stressed.

Emphasis is laid on professional associations, and participation in their activities, as a means of becoming involved with society at a variety of levels. Involvement, communication and exchange of ideas to the enhancement of the profession is evaluated to round off the analysis of the positive role of library schools in general, and of Manchester in particular in the context of communication studies.

9th IATUL CONFERENCE 12th-16th April 1981, Lausanne, Switzerland

"LIBRARIES AND THE COMMUNICATION PROCESS"

Programme:

Sunday 12th April

From 19.00 hours		Informal reception at the Hotel Royal & Savoy.
Monday 13th April	Theme:	THEORY AND TECHNIQUES OF COMMUNICATION
9.00-9.30 hours		Registration at the École Polytechnique Fédérale de Lausanne, Switzerland
9.30		Opening of the Conference by IATUL's President Dr. J.P. Sydler, Library Director, E.T.H Zürich, Switzerland
9.45		Speeches of welcome by Dr. F.G. Maier, Library Director, Bibliothèque Nationale, Berne, Switzerland. Representing the Swiss Ministry of the Interior Mr. P. Immer, Administrative Manager, École Polytechnique Fédérale de Lausanne, Switzerland
10.30		Coffee
11.00	Paper 1	COMMUNICATING WITH THE NEW ELECTRONIC LIBRARIES, Prof. Charles T. Meadow, Drexel University, USA Chairman: Mr. G.A. Hamel, former IATUL President and Library Director, University of Twente, The Netherlands
12.00		Lunch at the Copernic Restaurant on the University Campus
13.30	Paper 2	TECHNICAL MEANS FOR HUMAN COMMUNICATION, Prof. P-G. Fontolliet, École Polytechnique Fédérale de Lausanne, Switzerland
14.30	Communication 1	THIRD WAVE LIBRARY AND INFORMATION WORK, Betty K. Oldroyd, Head Library and Information Services of ESTEC, Noordwijk, The Netherlands

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Monday 13th April (contd.)

15.00	Communication 2	POSTER SESSIONS AS A NEW VIEWPOINT OF SCIENTIFIC COMMUNICATION. GENERAL PROBLEMS AND LIBRARY ASPECTS, Dr. D. Schmidmaier, Library Director, Bergakademie Freiberg, DDR
15.30	Communication 3	SOME PROBLEMS AND PROPOSALS FOR COMMUNICATION IN MECHANICAL ENGINEERING, Mag. V. Jarc, INDOK Centre for Mechanical Engineering, Ljubljana, Yugoslavia Chairman: Mr. T. Tanzer, Director of Libraries, École Polytechnique Fédérale de Lausanne,
16.00		Coffee
16.30		GENERAL ASSEMBLY
Evening		Free

Tuesday 14th April Theme: NETWORKS FOR COMMUNICATION

9.00 hours	Paper 3	COMMUNICATION AND A NATIONAL INFORMATION POLICY, Prof. P. Havard-Williams, Department of Library and Information Studies, Loughborough University, U.K.
10.00	Communication 4	COMMUNICATING SCIENTIFIC INFORMATION THROUGH A UNIVERSITY LIBRARY NETWORK, Dr. D. Shaw, Keeper of Scientific Books, Radcliffe Science Library, Oxford, U.K.
10.30		Coffee
11.00	Communication 5	USER STUDIES IN CONNECTION WITH THE DEVELOPMENT OF A DECENTRALIZED LIBRARY NETWORK, Dr. Nancy Fjällbrant & Mr. O. Friberg, Chalmers University of Technology, Gothenburg, Sweden
11.30	Communication 6	THE TECHNOLOGICAL UNIVERSITY LIBRARY'S COMMUNICATION WITH ITS PUBLIC, Mr. A.C. Bubb, Librarian, University of Salford, U.K. Chairman: Dr. J. Zandvliet, Director, Delft University of Technology Library, Delft, The Netherlands
12.00		Lunch at the Copernic Restaurant

Tuesday 14th April (contd)

	Theme:	COMMUNICATION WITH THE THIRD WORLD COUNTRIES
13.30	Paper 4	INFORMATION SERVICES - AN OVERLOOKED COMPONENT IN THE THIRD WORLD DECISION MAKING PROCESSES. EXPERIENCE FROM SOME UNESCO MISSIONS, Dr. B.V. Tell, Director of Libraries, Lund University, Sweden
14.30	Paper 5	COMMUNICATION WITH THE THIRD WORLD COUNTRIES, Mr. J.S. Musisi, Librarian, Kenya Science Teachers College, Nairobi, Kenya
15.30	Paper 6	LIBRARIES AND INFORMATION IN DEVELOPING COUNTRIES, Prof. P. Havard-Williams, Department of Library and Information Studies, Loughborough University, U.K.
16.00	Communication 7	ECONOMICAL AND SOCIAL FACTORS AND LIBRARIES IN JAMAICA, Ms. Yvonne Lawrence, Department of Library and Information Studies, Loughborough, U.K. Chairman: Dr. S. Westberg, Director, Chalmers University of Technology Library, Gothenburg, Sweden
19.00		CONFERENCE DINNER at the "Chalet-Suisse" in the Parc de Sauvabelin.

Wednesday 15th April

	Theme:	COMMUNICATION IN INTERNATIONAL ENVIRONMENTS
8.30		Whole day excursion by bus to (a) CERN - Centre Européenne de Recherche Nucléaire, Geneva Lunch will take place at the CERN self-service (b) International Labour Office, Geneva The return trip to Lausanne will include a visit to a "Vintner" or wine-seller, and an apéritif at The Caveau du Chateau de Luins. Dinner will be served at the Masson Vinzel's

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Thursday 16th April **Theme:** COMMUNICATION WITH THE WORLD OUTSIDE

9.00	Paper 7	IFLA'S ROLE IN AIDING COMMUNICATION BETWEEN LIBRARIES, Ms. Else Granheim, President of IFLA
10.00	Communication 8	PUBLIC RELATIONS OF SCIENTIFIC LIBRARIES IN THE FEDERAL REPUBLIC OF GERMANY, Dr. Y. Haase, Library Director, Hessische Landes- und Hochschulbibliothek, Darmstadt, B.R.D.
10.30		Coffee
11.00	Communication 9	FURTHER TO MY EGG: THE STORY OF AN AUSTRALIAN LIBRARY CAMPAIGN, Mr. A. Mortimer, Liaison Librarian, South Australian Institute of Technology, Adelaide, Australia
11.30	Communication 10	TECHNICAL COOPERATION BETWEEN LIBRARIES AND THE ADVANCED SUBSCRIPTION SERVICES, Mr. Arnoud de Kemp, Dep. General Manager, Swets & Zeitlinger, Lisse, The Netherlands Chairman: Mr. M. Hill, Director, Science Reference Library, London, U.K.
12.00		Lunch at the Copernic Restaurant
	Theme:	THE ART AND LINGUISTICS OF COMMUNICATION
13.30	Paper 8	SYSTEMS VERSUS USERS: AN ANALYSIS OF THE ART AND/OR SCIENCE OF SEARCH NEGOTIATIONS, Prof. Kathleen Bivins, Graduate School of Library and Information Science, UCLA, USA
14.30	Communication 11	DILEMMAS OF DOCUMENT COMMUNICATION Mr. Axel Andersen, Royal School of Librarianship, Copenhagen, Denmark
15.00	Communication 12	A COMPUTATIONAL LINGUISTICS APPROACH TO CONCEPTUAL INFORMATION PROCESSING Dr. Inger Bierschenk, Department of Educational and Psychological Research, Lund University, Sweden
	Communication 13	COMMUNICATION SKILLS: THE ROLE OF THE LIBRARY SCHOOL, Mr. B. Meakin, Faculty of Community Studies, Manchester Polytechnic, U.K. Chairman: Dr. Nancy Fjällbrant, Deputy Librarian, Chalmers University of Technology, Gothenburg, Sweden

Thursday 16th April (contd.)

15.30	SUMMING UP: Mr. M. Hill, Director, Science Reference Library, London, U.K.
16.00	END OF CONFERENCE

BUS SERVICES

Bus transfers during the whole conference will be as follows:

Every morning, 8.30 a.m. from Hotel Royal & Savoy to l'École Polytechnique Fédérale de Lausanne

Monday 13th	6-6.30 p.m. approx. return to hotel
Tuesday 14th	5.00 p.m. return to hotel
	6.30 p.m. departure for restaurant (and return to hotel)
Wednesday 15th	8.30 a.m. departure for Geneva (and return)
Thursday 16th	4.30 p.m. approx. return to hotel after official closing of meeting.

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